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Cavalcante et al.

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(54) **CRATE WITH RETRACTABLE WALL**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 169 days.

This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

(62) Division of application No. 15/332,400, filed on Oct. 24, 2016, now Pat. No. 10,077,152, which is a (Continued)

(51) **Int. Cl.**

B65D 88/52	(2006.01)
B65D 25/00	(2006.01)
B65D 6/18	(2006.01)
B65D 88/10	(2006.01)
B65D 25/30	(2006.01)
B65D 85/32	(2006.01)

(52) **U.S. Cl.**
CPC ***B65D 88/52*** (2013.01); ***B65D 11/1833*** (2013.01); ***B65D 25/005*** (2013.01); ***B65D 25/30*** (2013.01); ***B65D 85/32*** (2013.01); ***B65D 88/10*** (2013.01); *B65D 11/184* (2013.01); *B65D 88/522* (2013.01); *B65D 88/524* (2013.01)

(58) **Field of Classification Search**
CPC B65D 6/18; B65D 88/52; B65D 88/522; B65D 11/184; B65D 88/524; B65D 7/26; B65D 7/18; B65D 7/24; B65D 11/1833; B65D 9/14; B62B 3/10
USPC 220/4.01; 206/503
See application file for complete search history.

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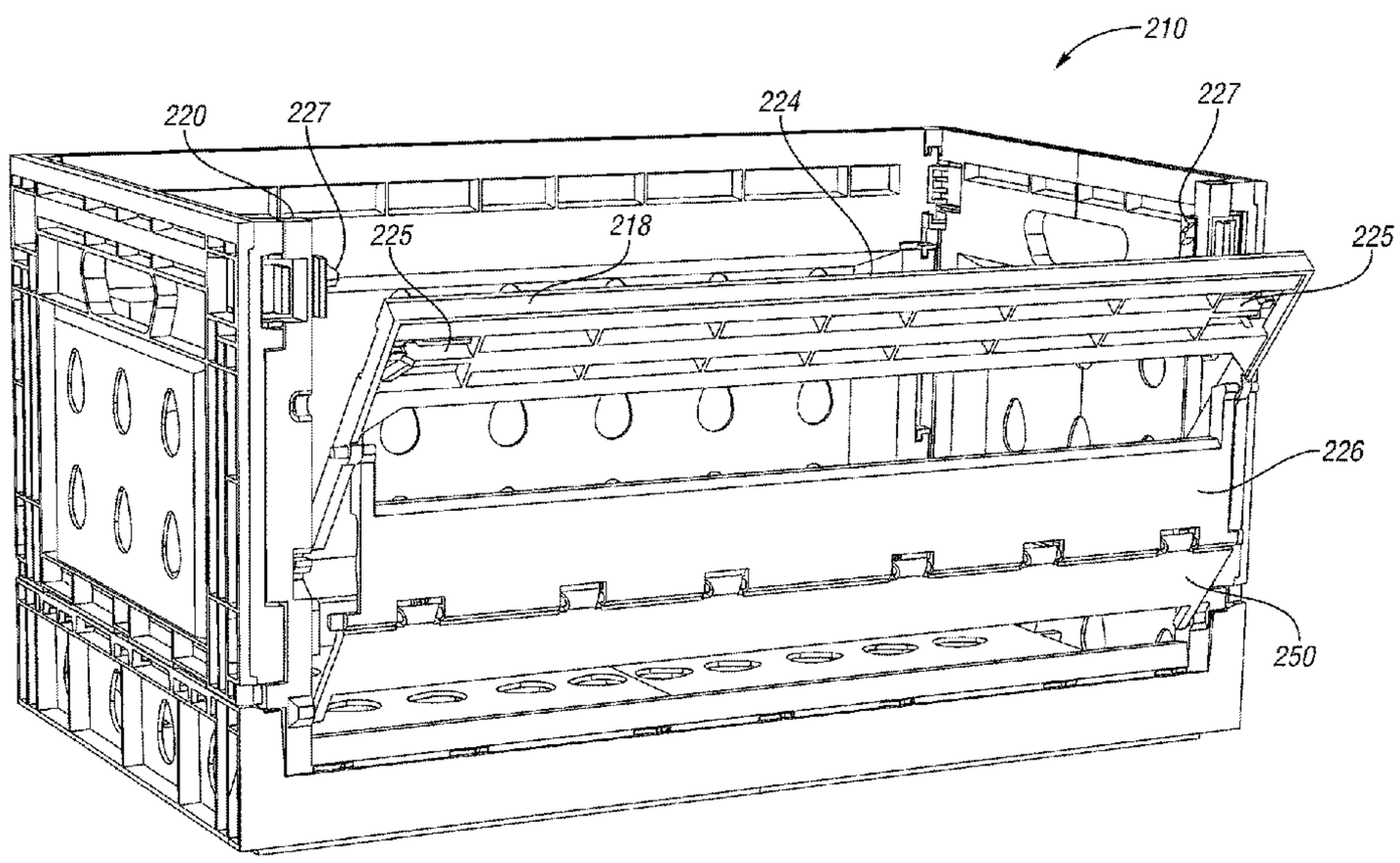
(57) **ABSTRACT**

A crate includes a base and a plurality of walls including a front wall. The front wall is movable between a retracted, open position and a closed position. In some embodiments, the front wall includes a frame, a first portion and a second portion. The first portion is hingeably connected to the frame and the second portion is hingeably connected to the first portion.

16 Claims, 22 Drawing Sheets



Related U.S. Application Data

division of application No. 14/515,027, filed on Oct. 15, 2014, now Pat. No. 9,475,638, which is a division of application No. 13/537,210, filed on Jun. 29, 2012, now Pat. No. 8,863,971.

(60) Provisional application No. 61/502,847, filed on Jun. 29, 2011, provisional application No. 61/507,917, filed on Jul. 14, 2011, provisional application No. 61/530,389, filed on Sep. 1, 2011, provisional application No. 61/550,892, filed on Oct. 24, 2011.

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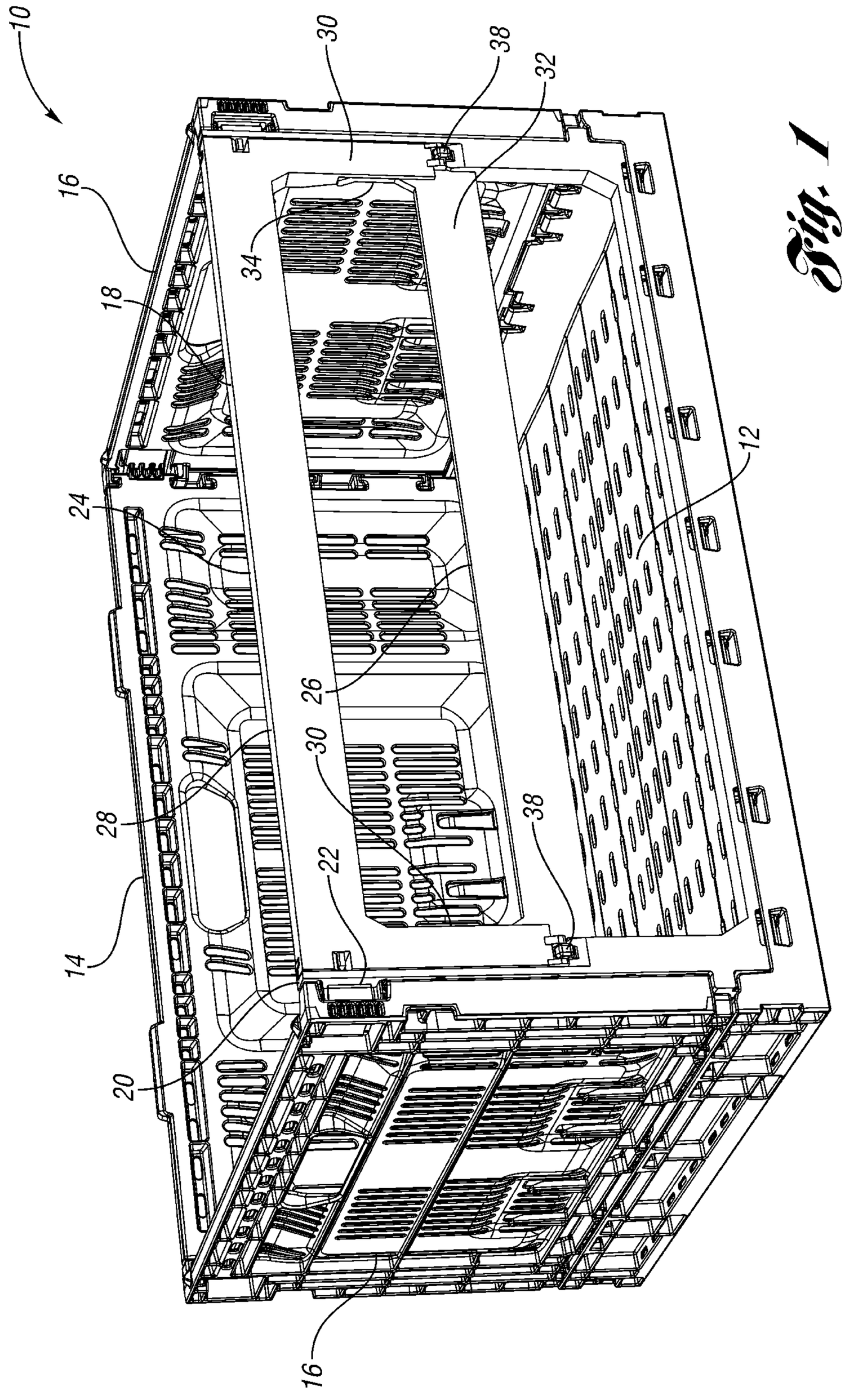
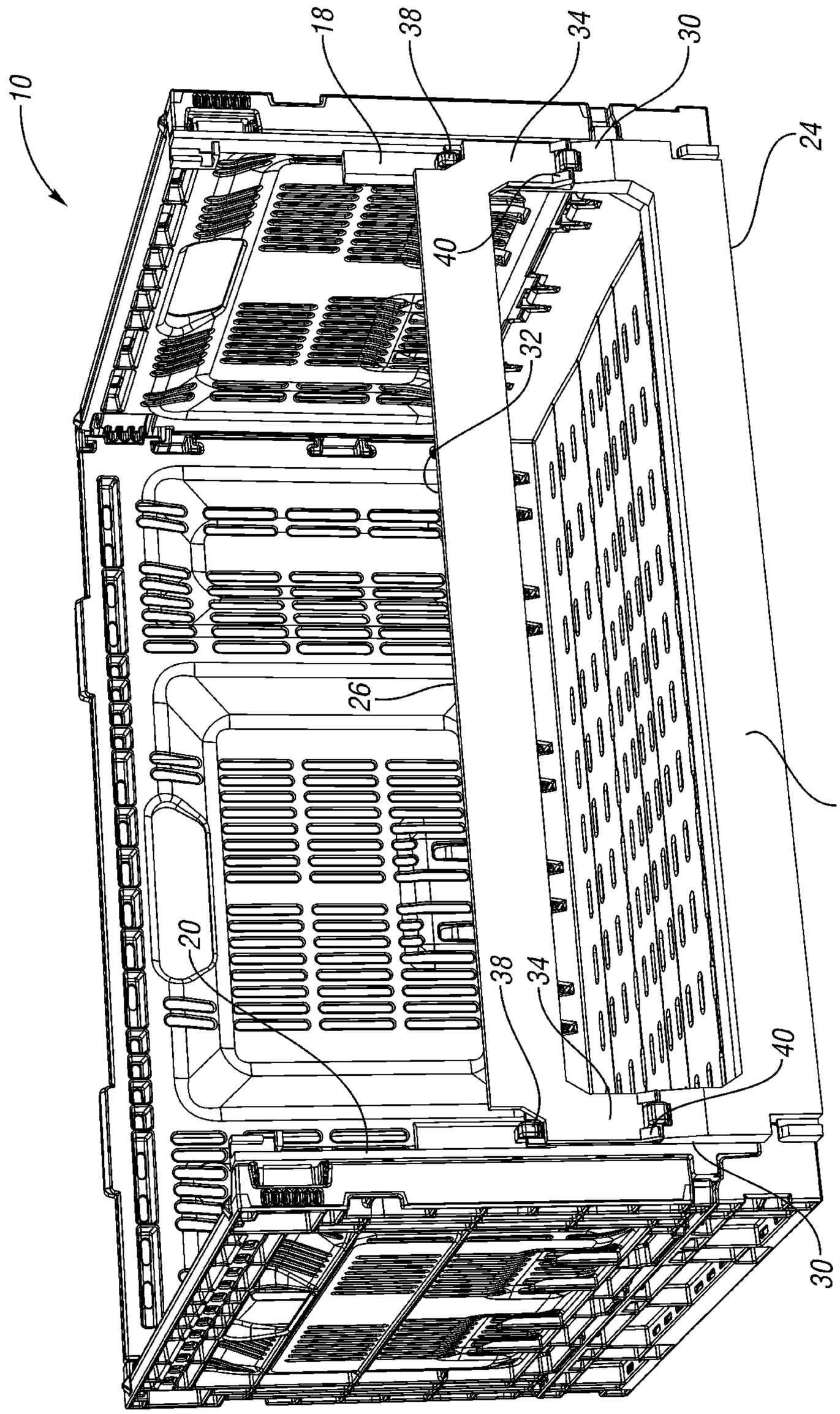


Fig. 1



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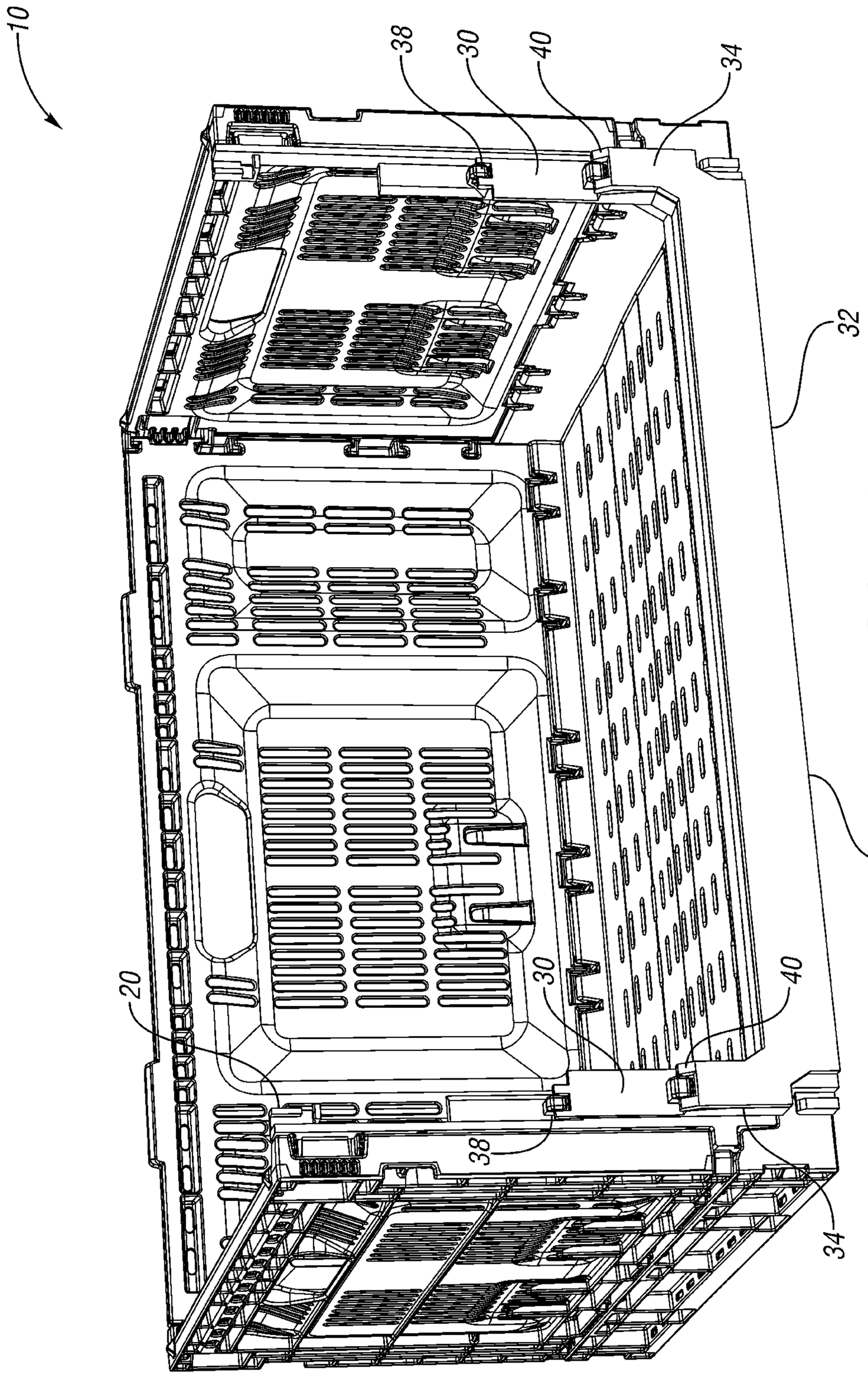

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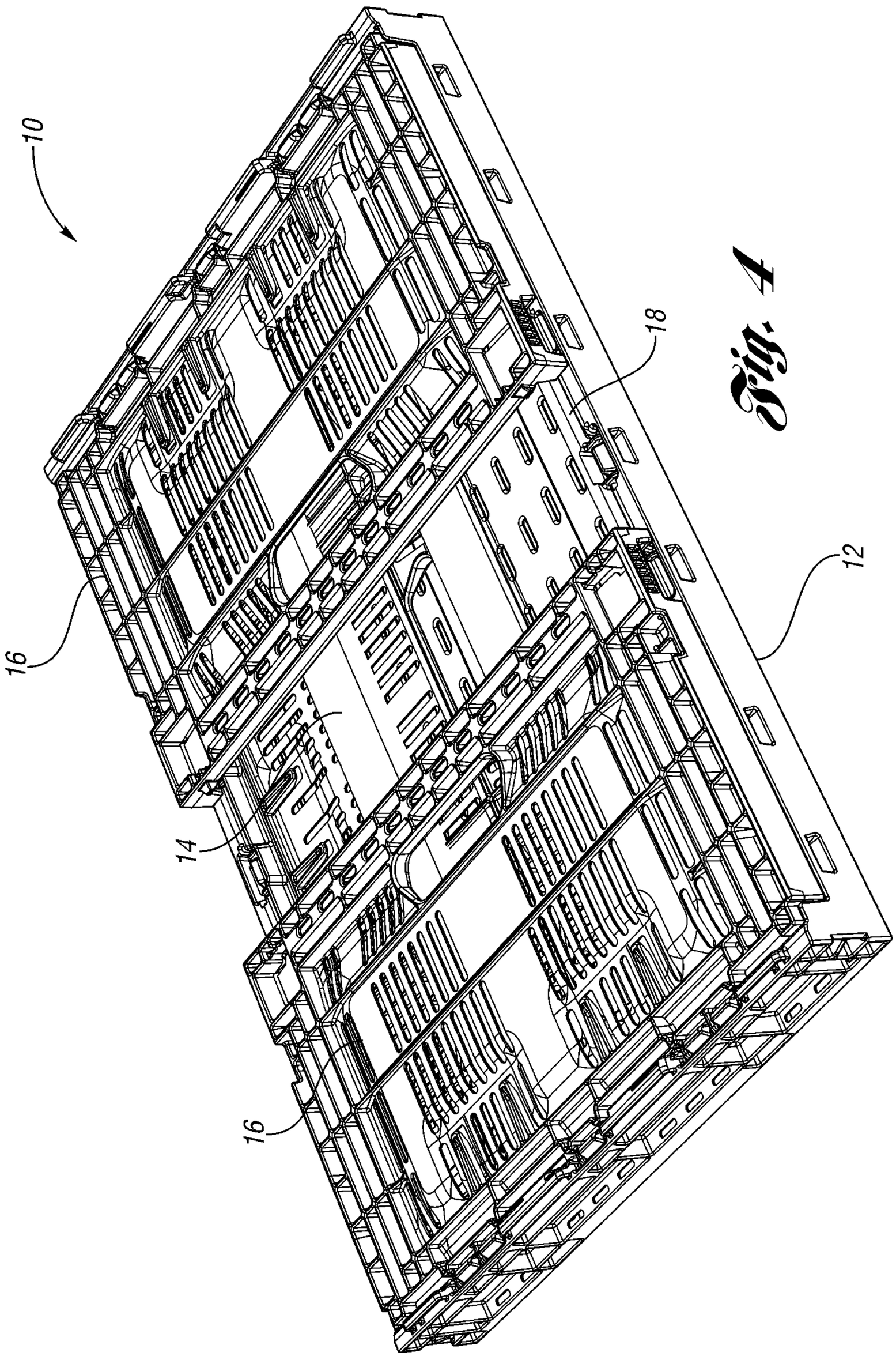

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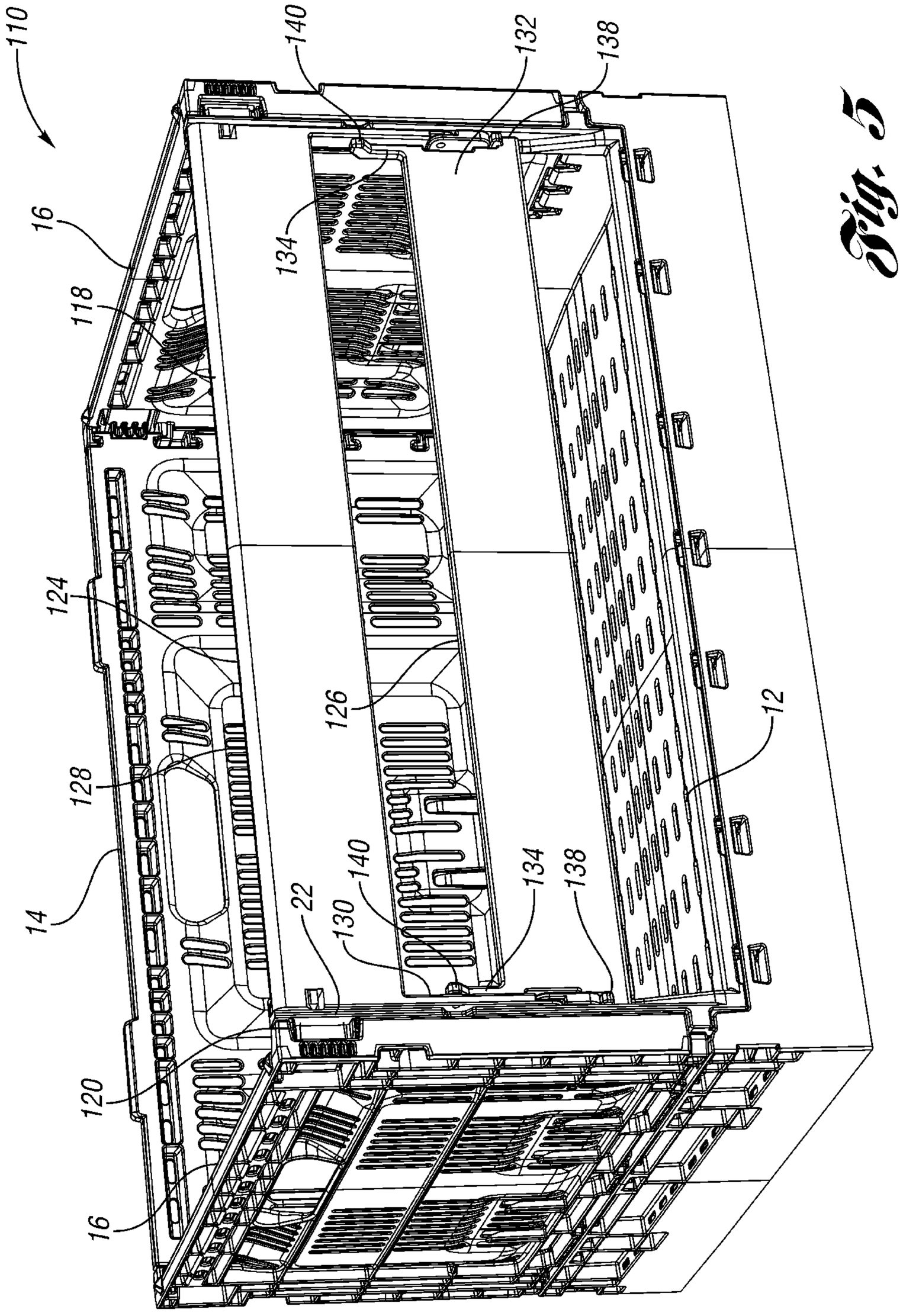
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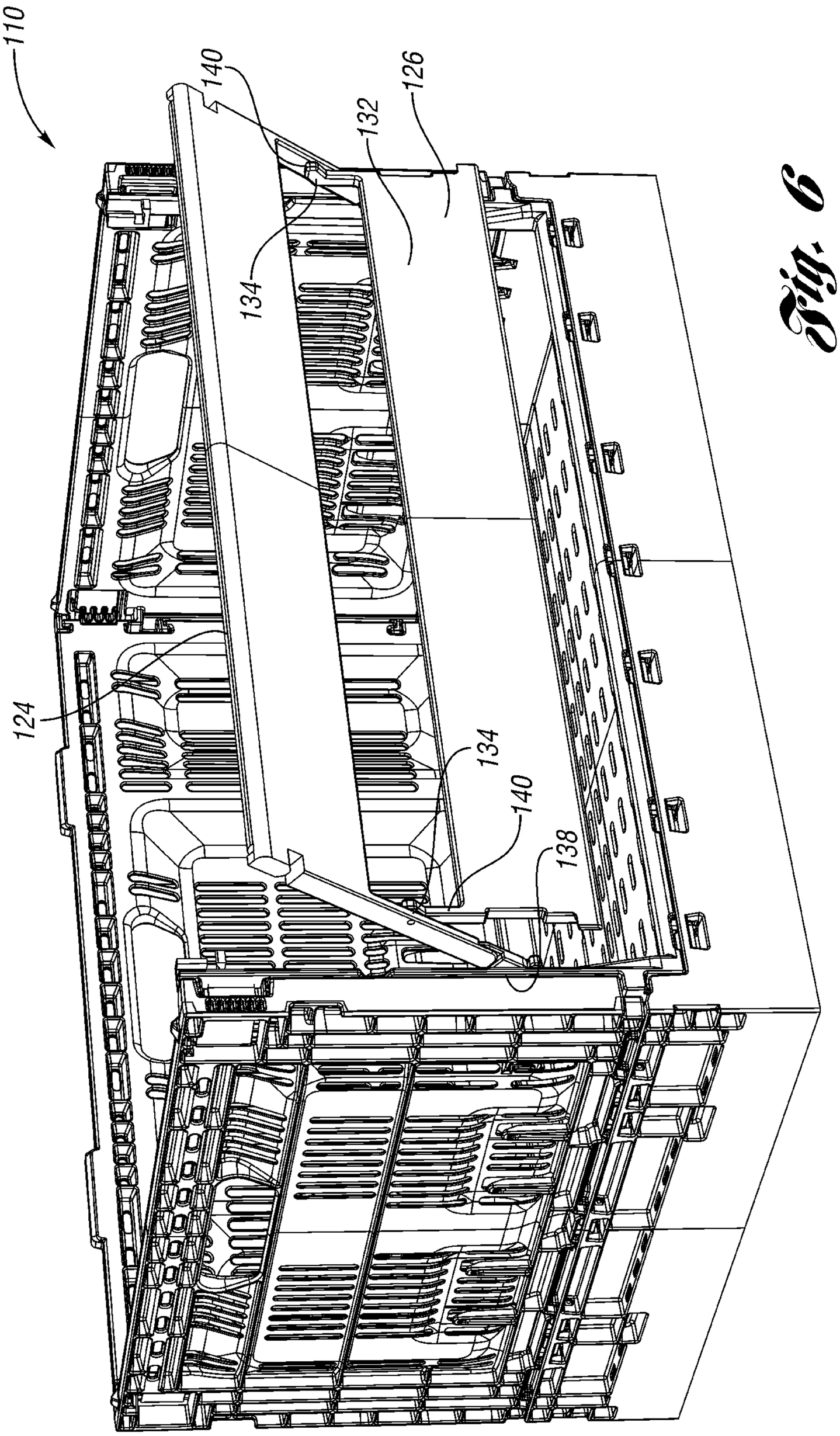
Fig. 5



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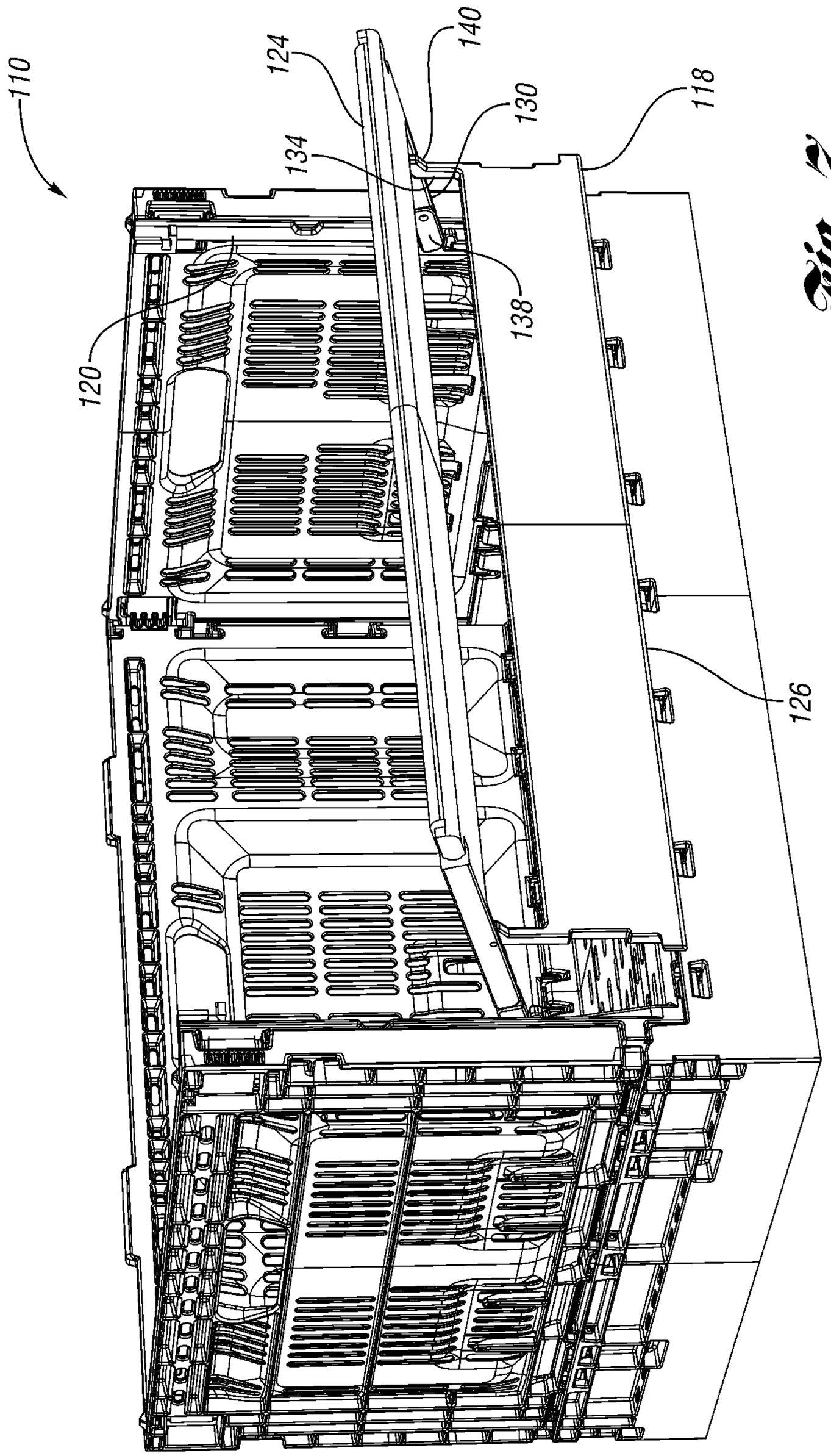

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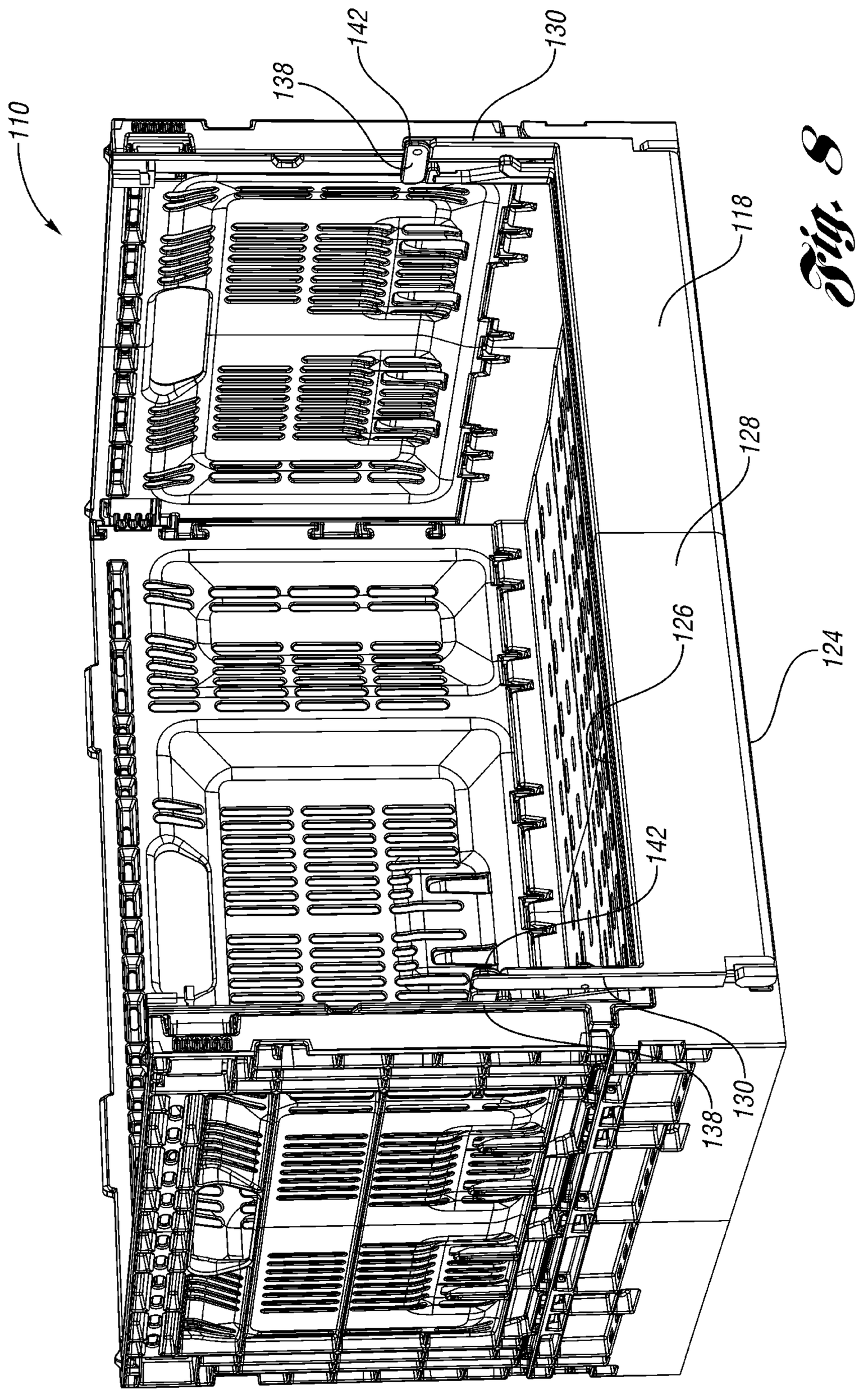

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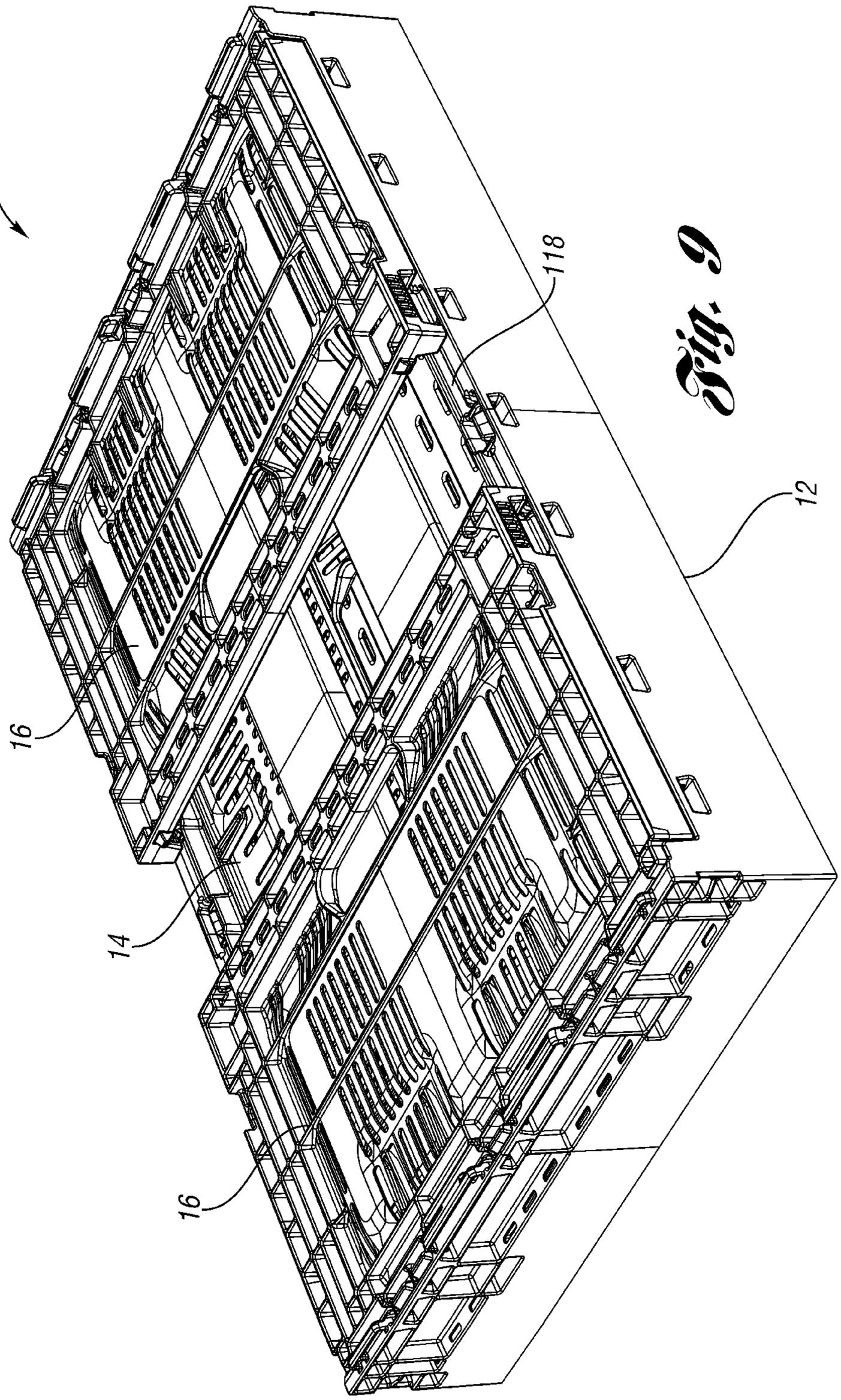

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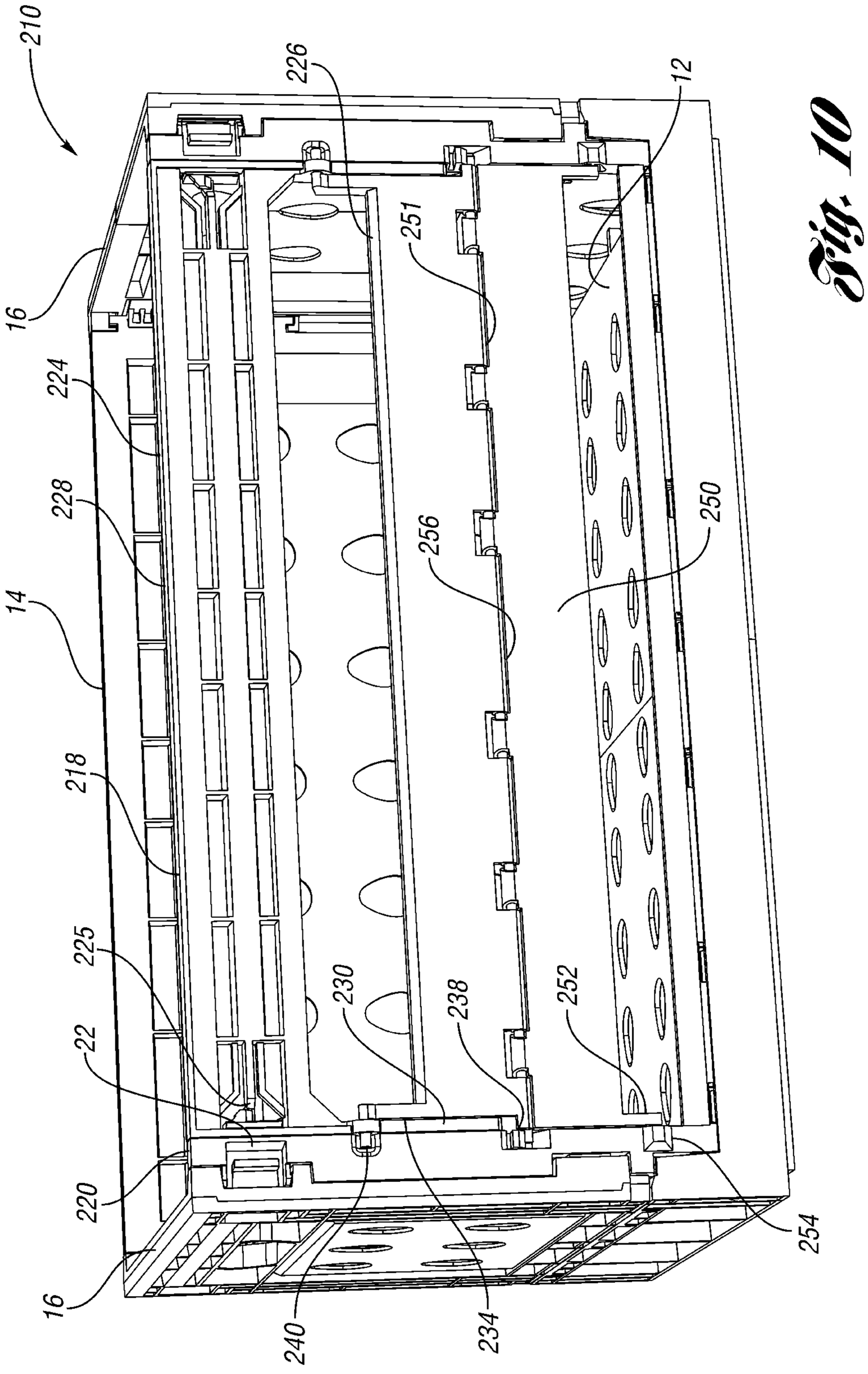
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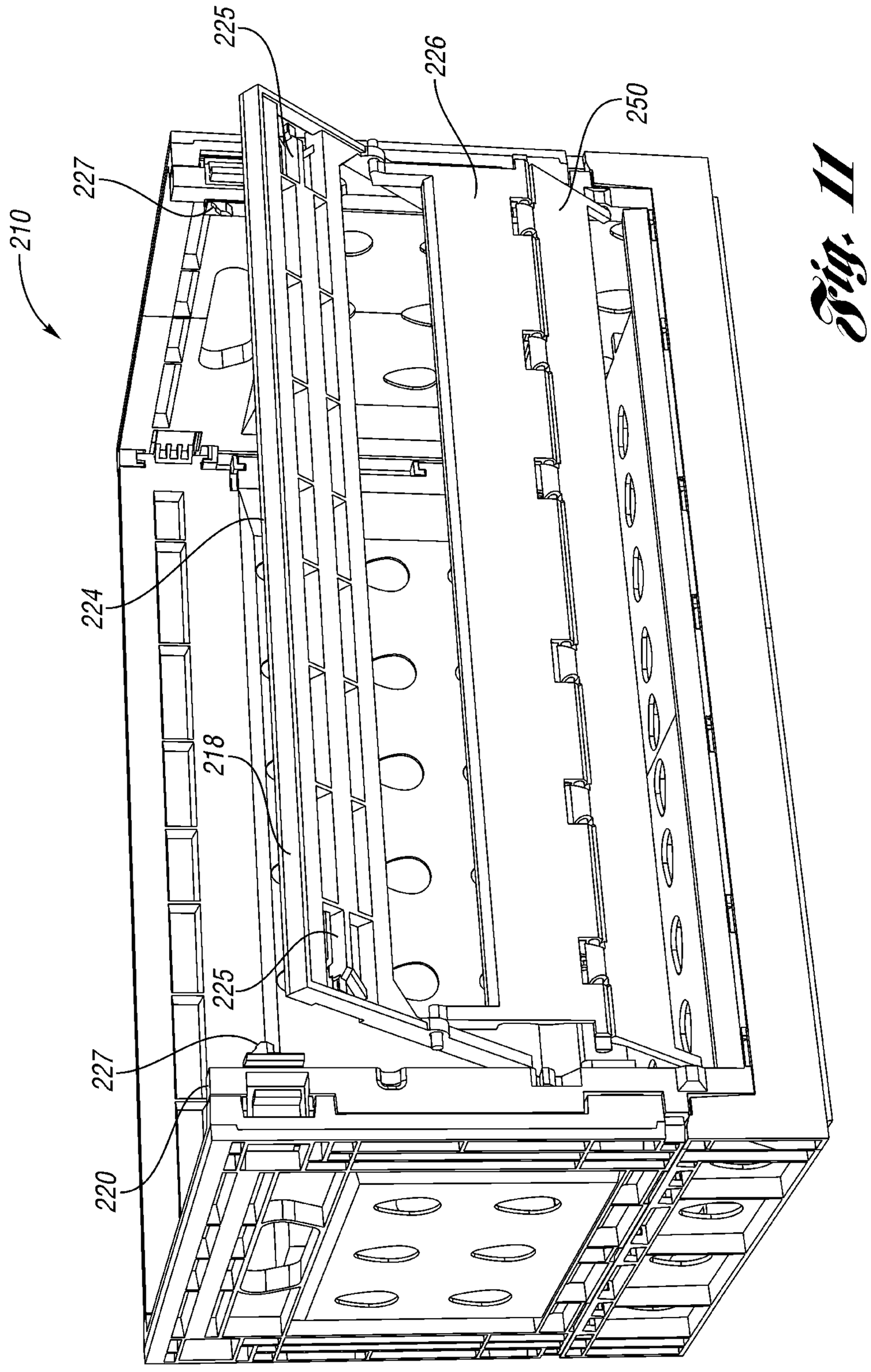
Fig. 10



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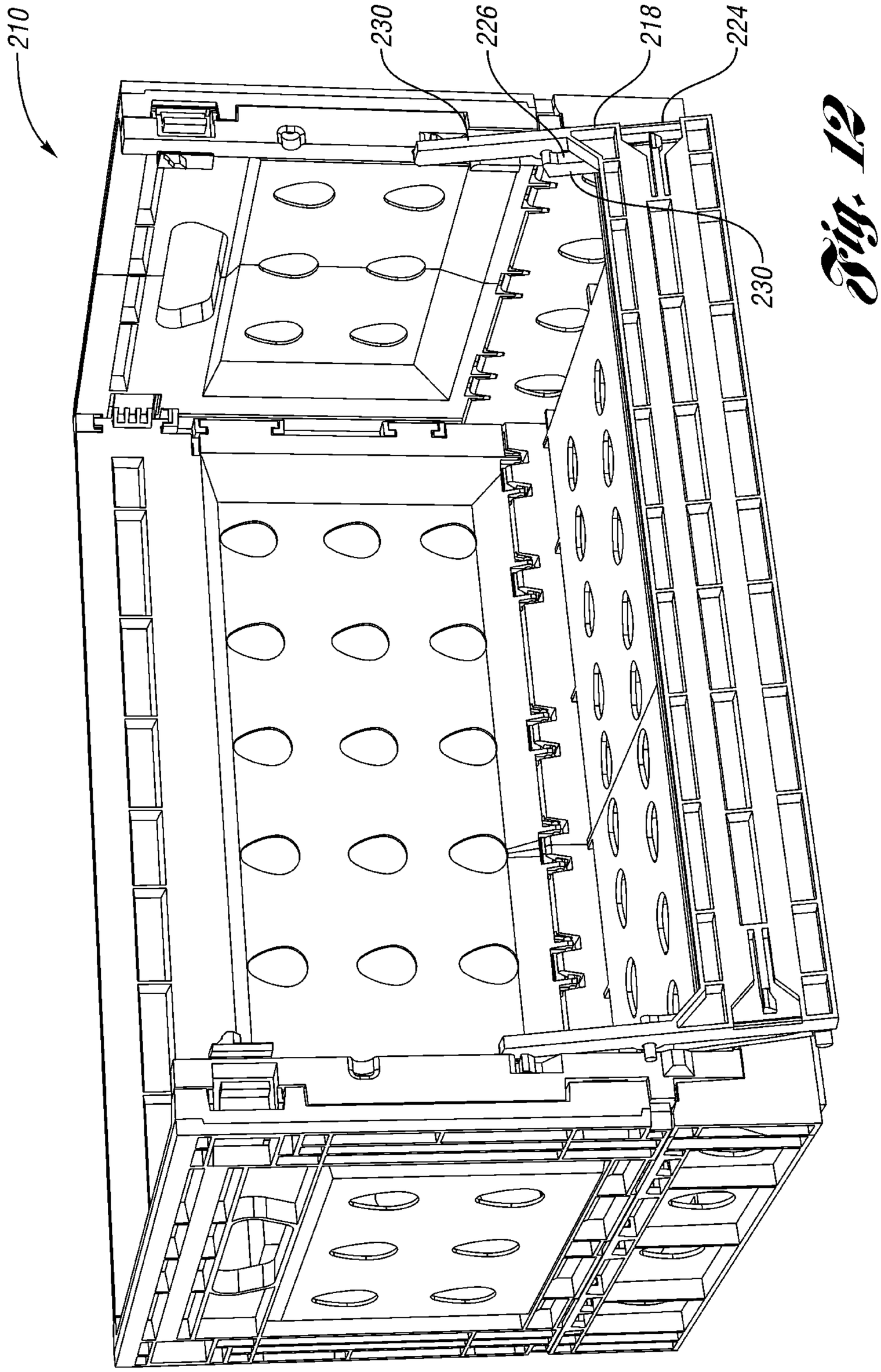

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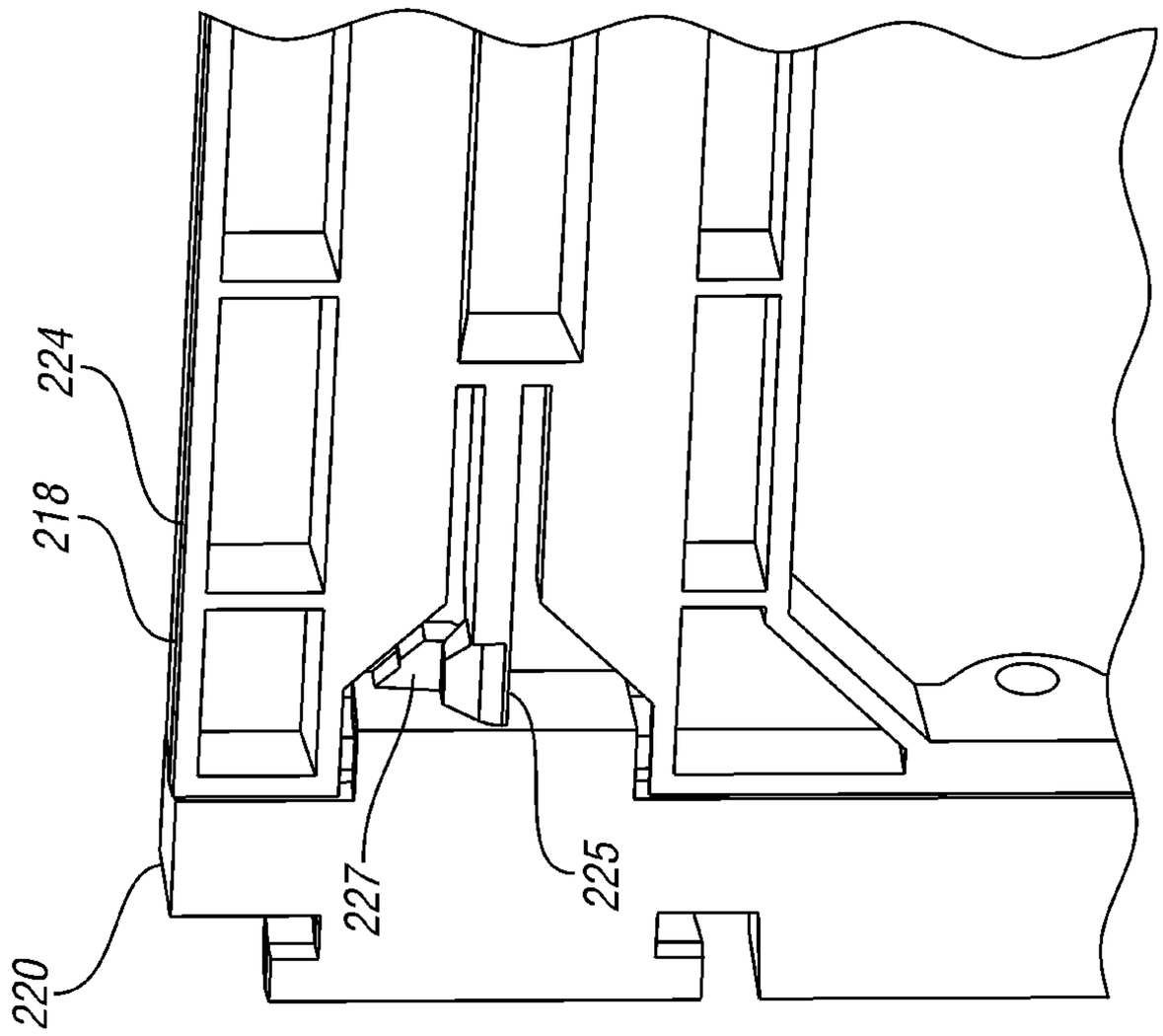

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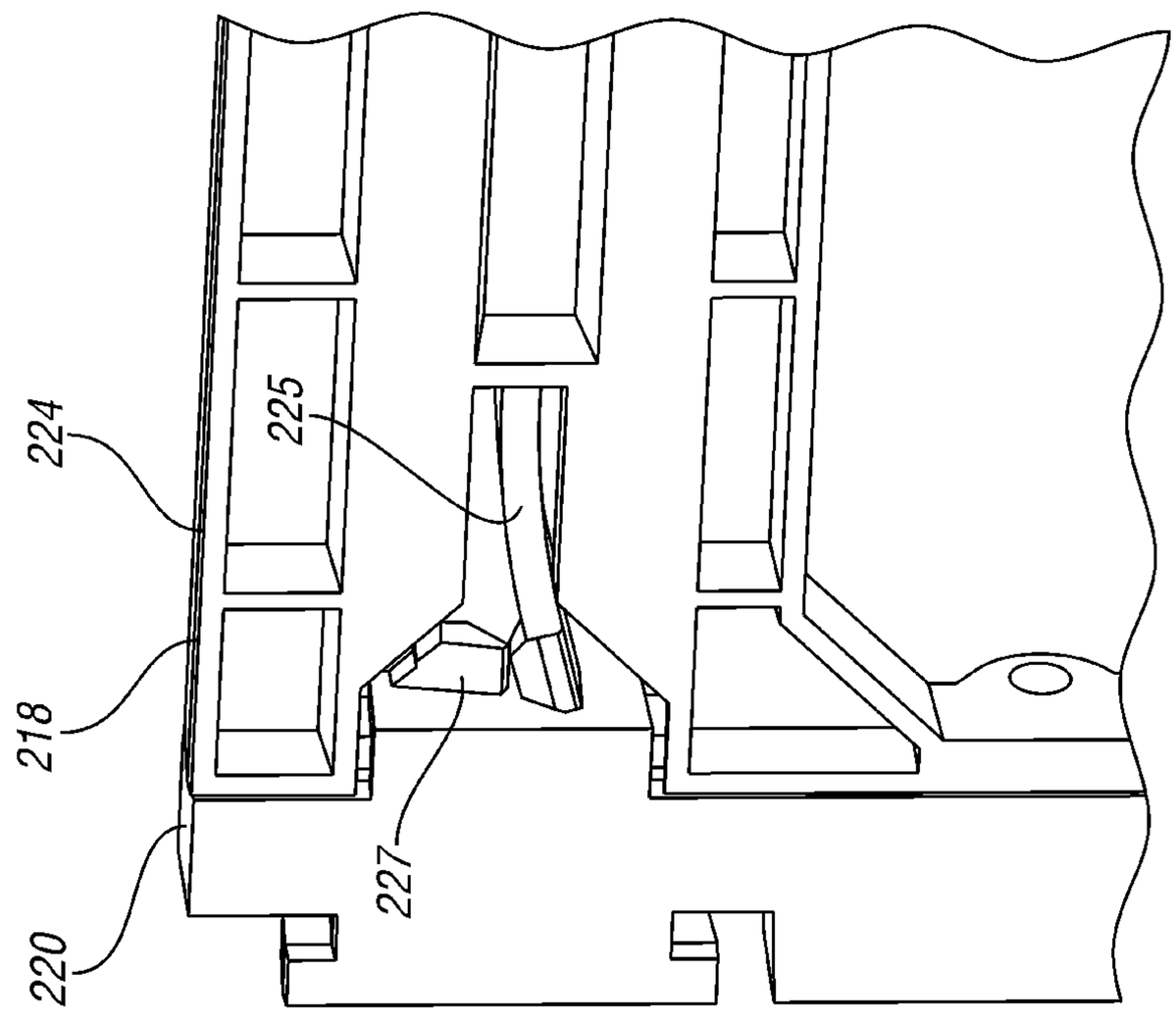

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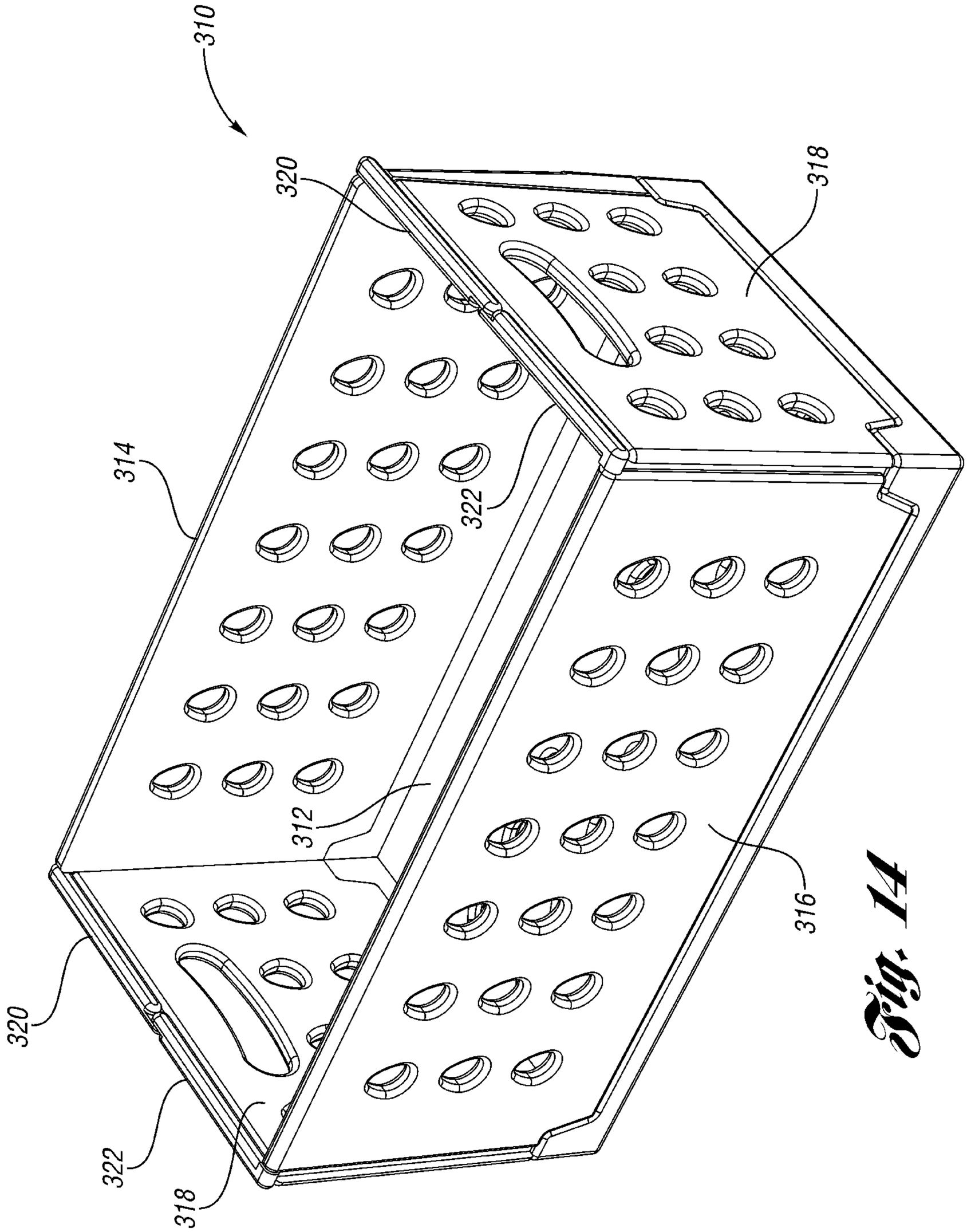

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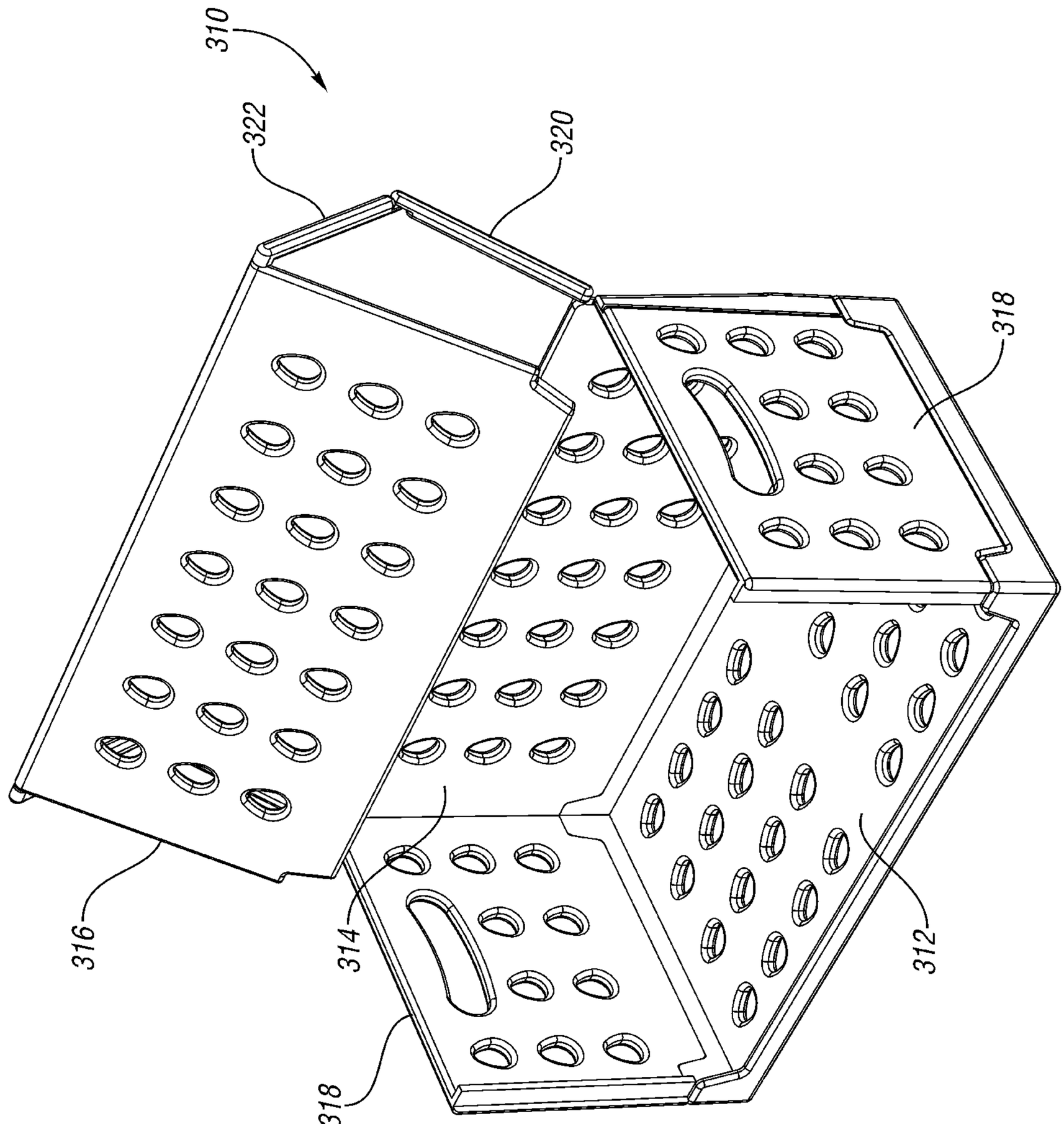

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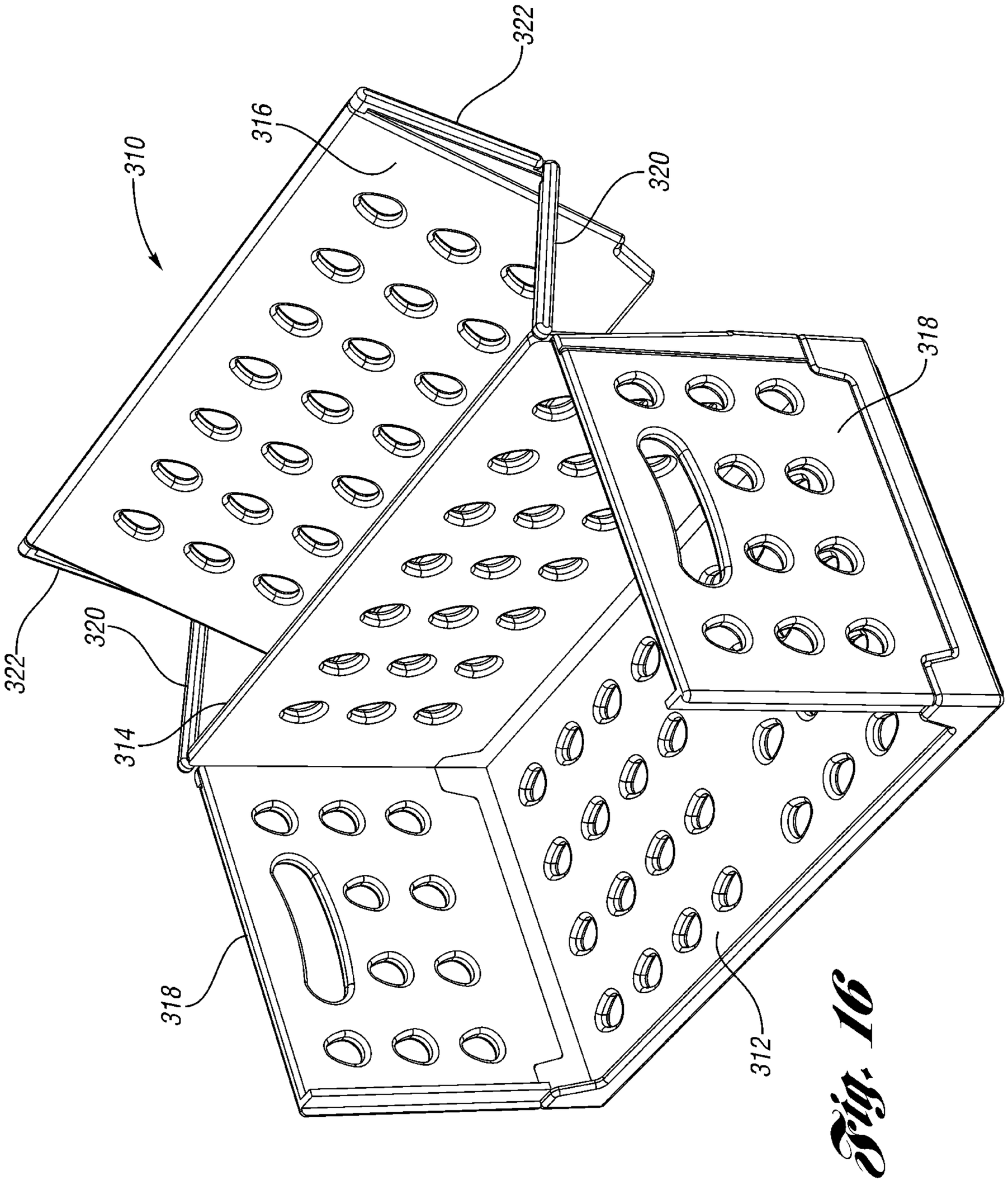

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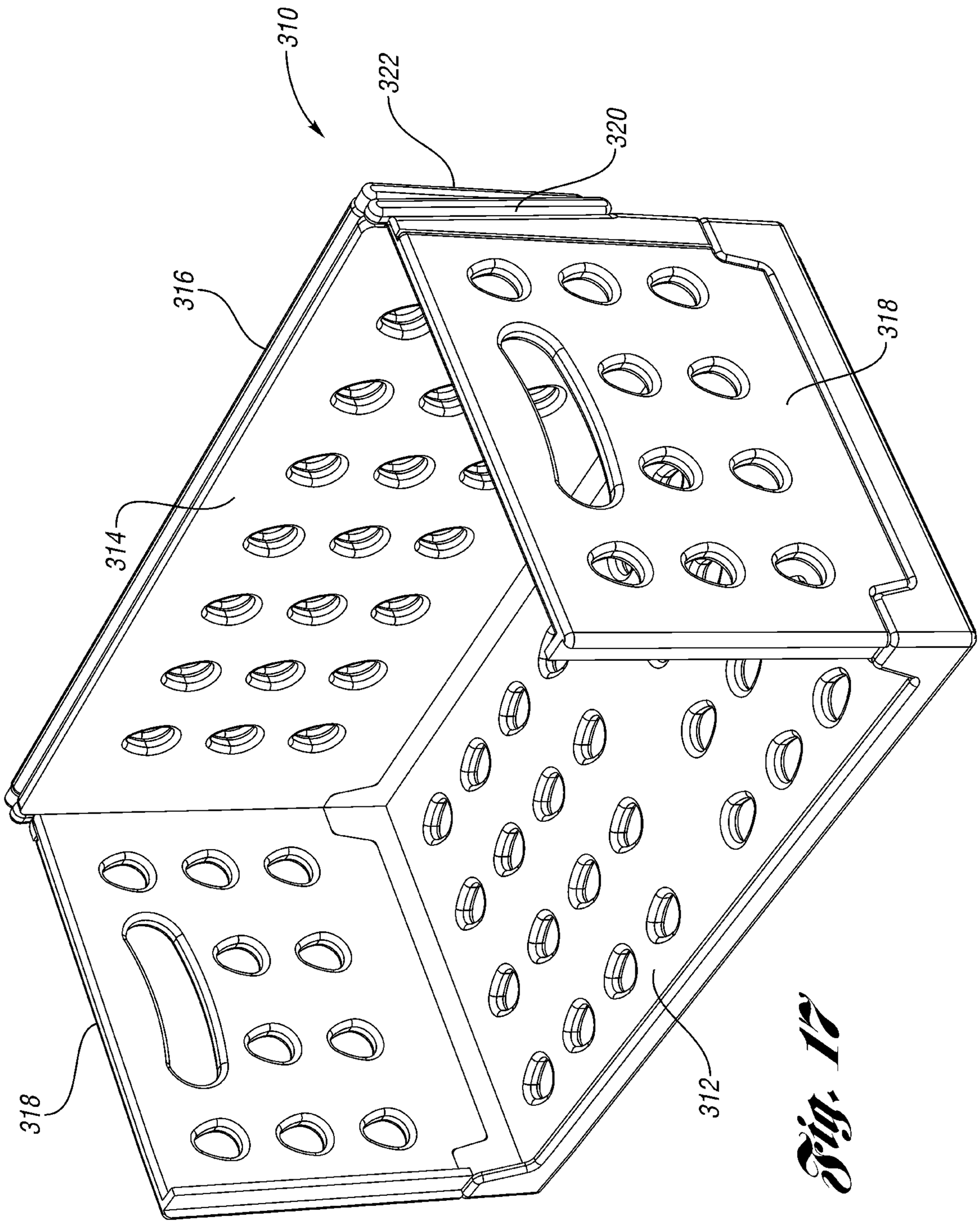

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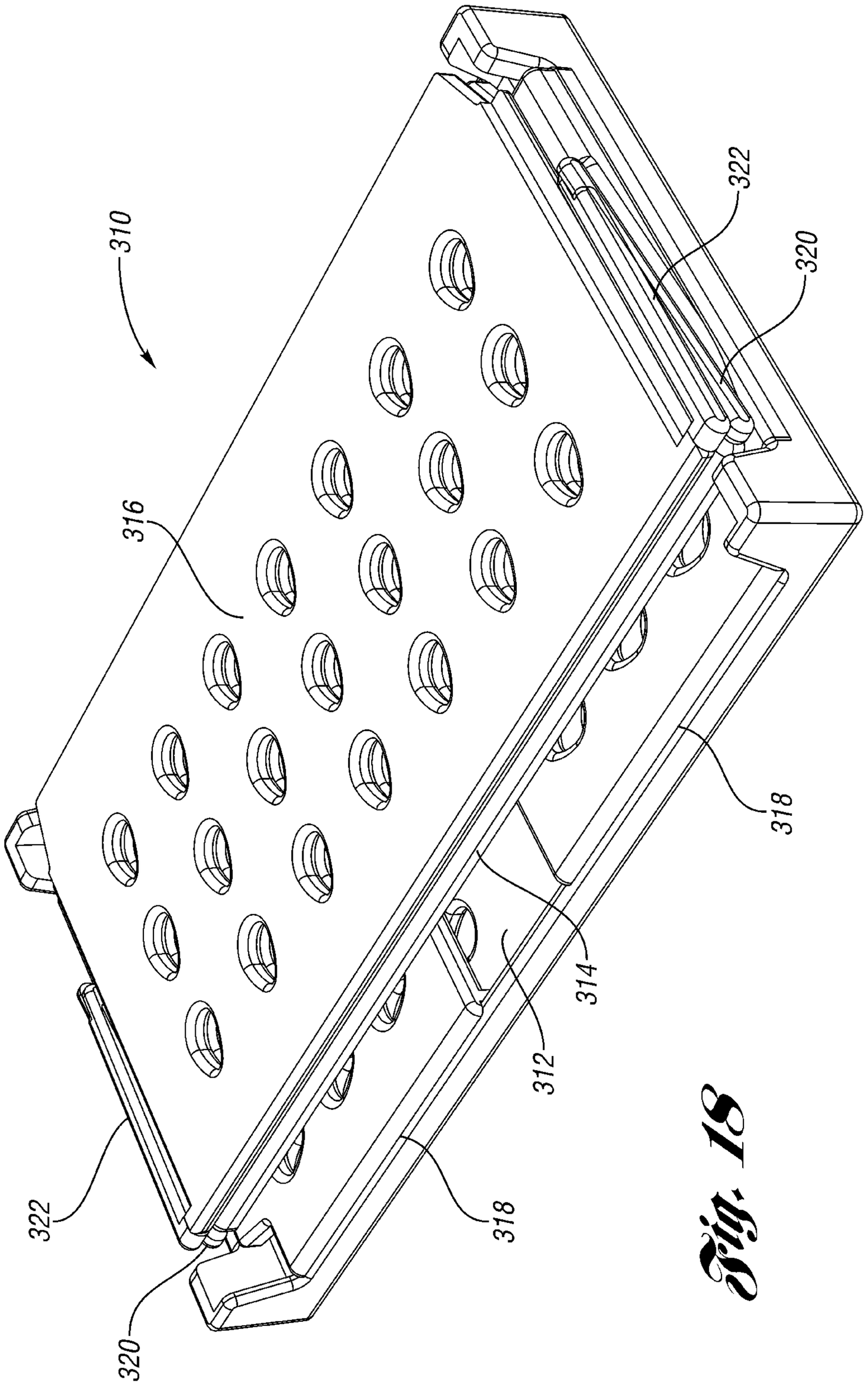

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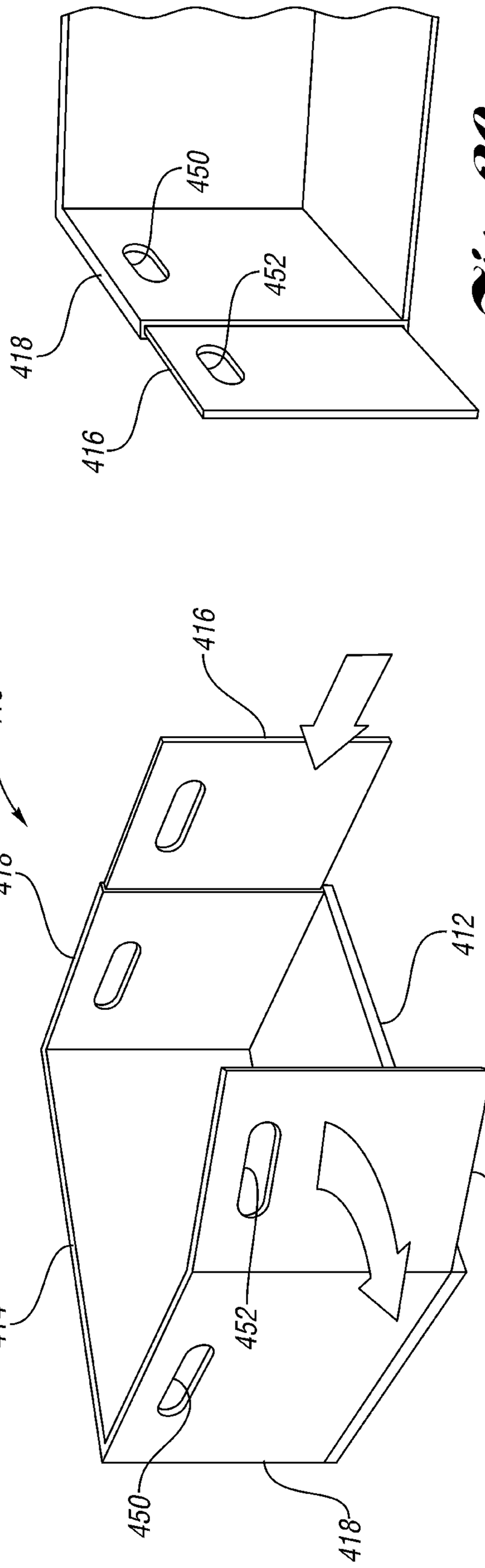

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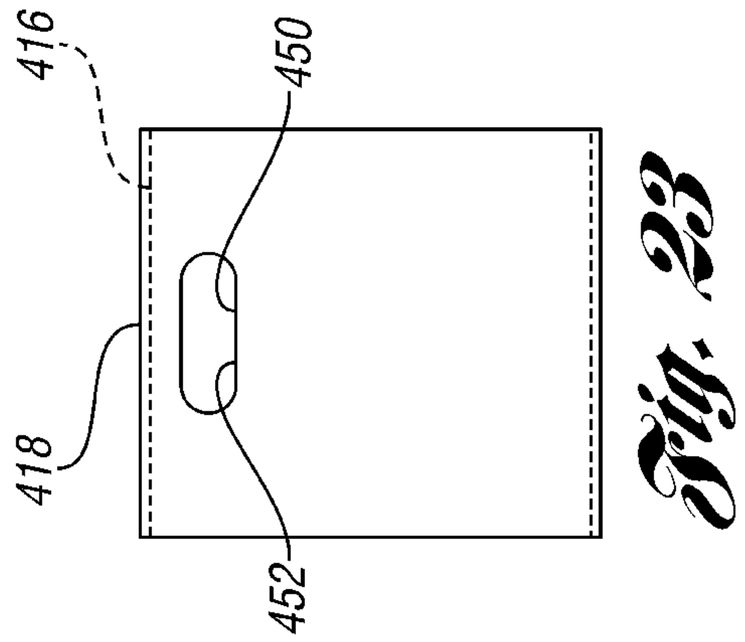

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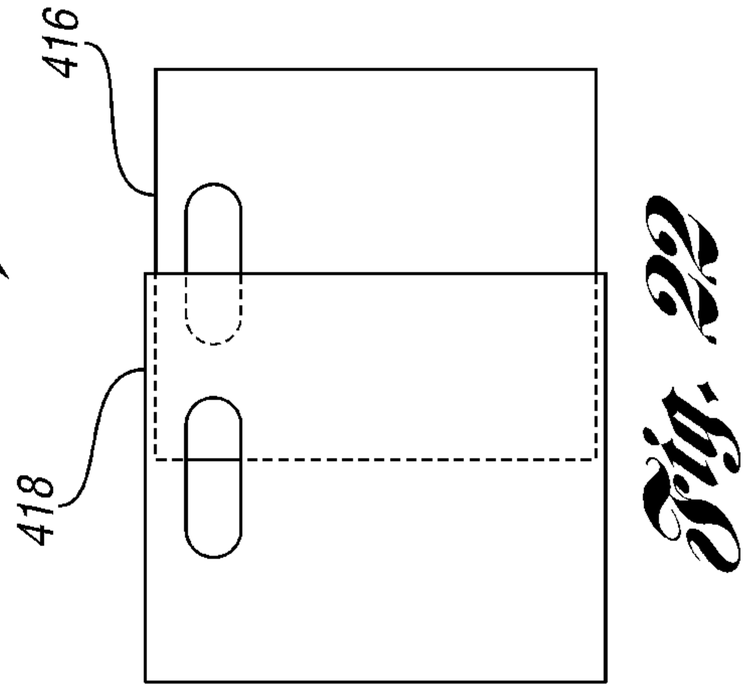

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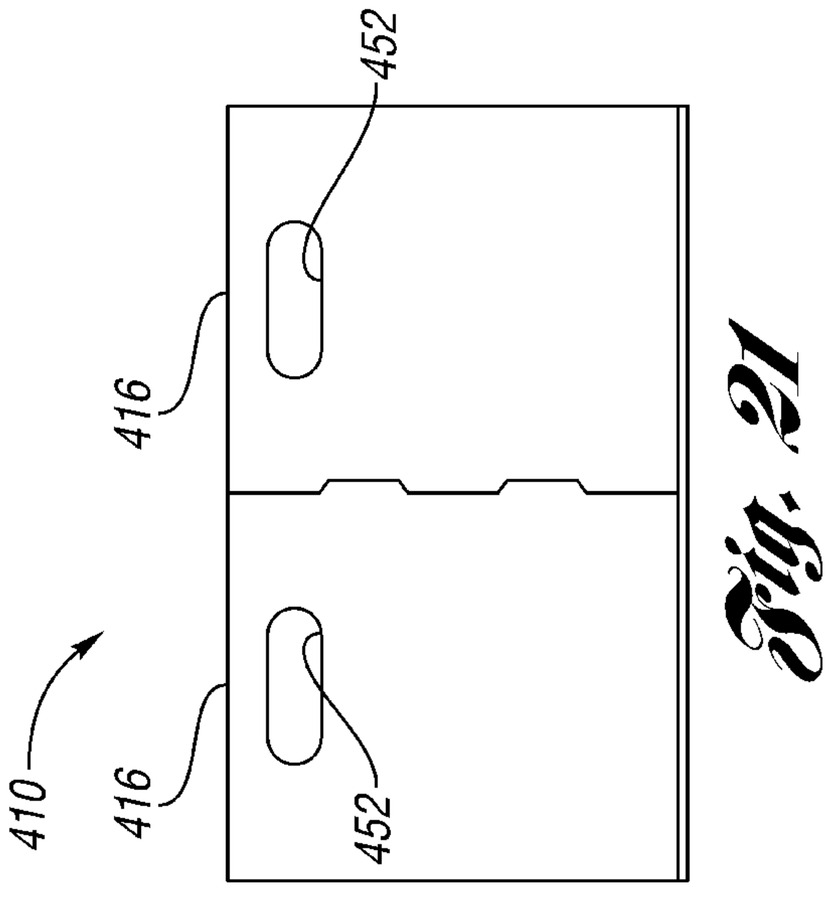

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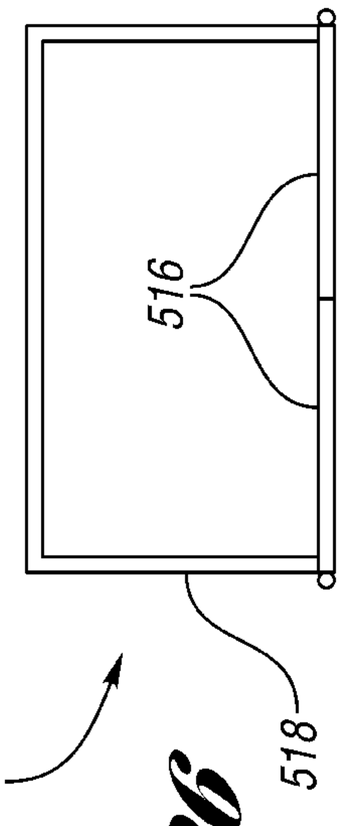

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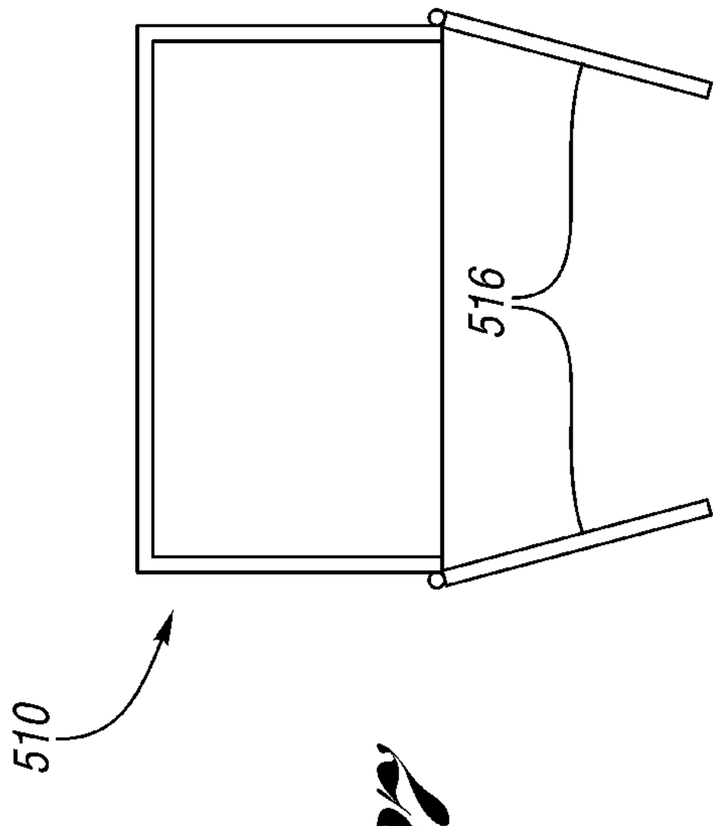

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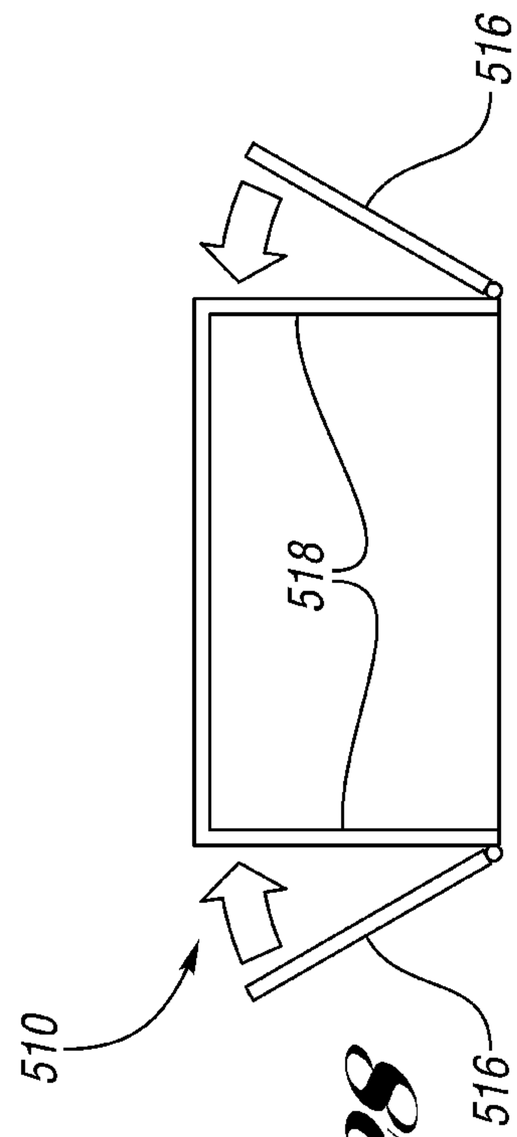

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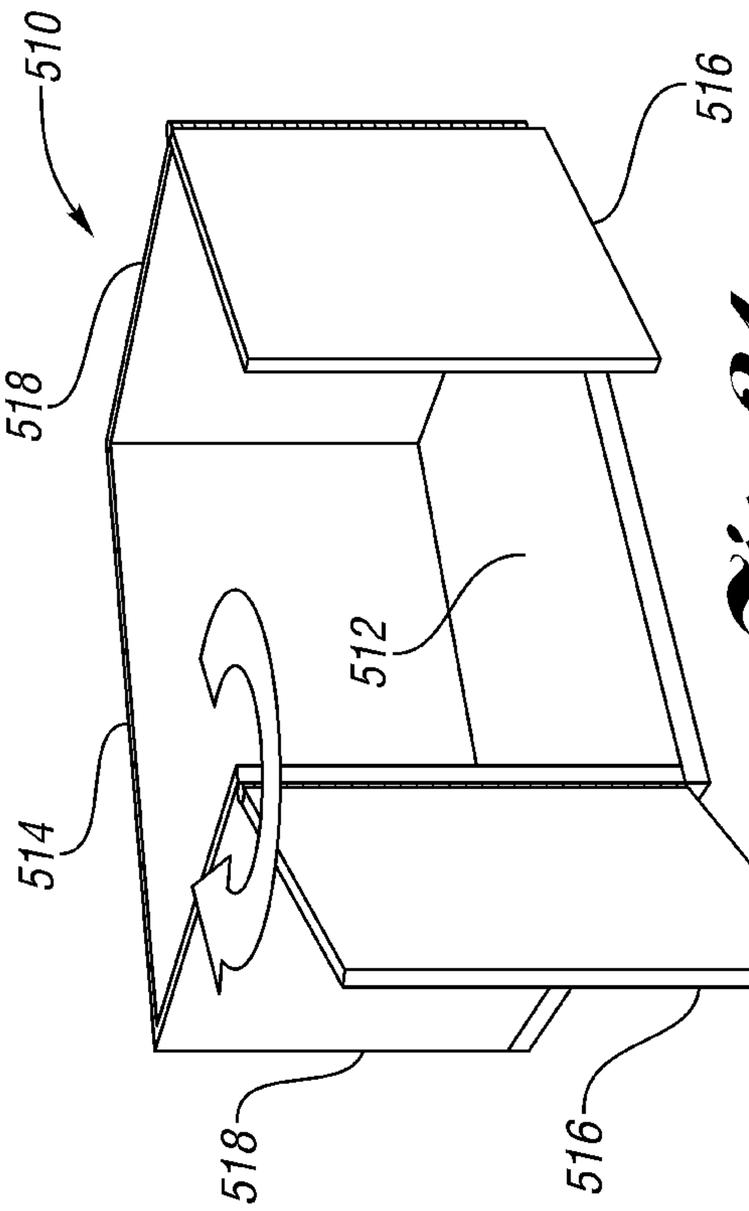

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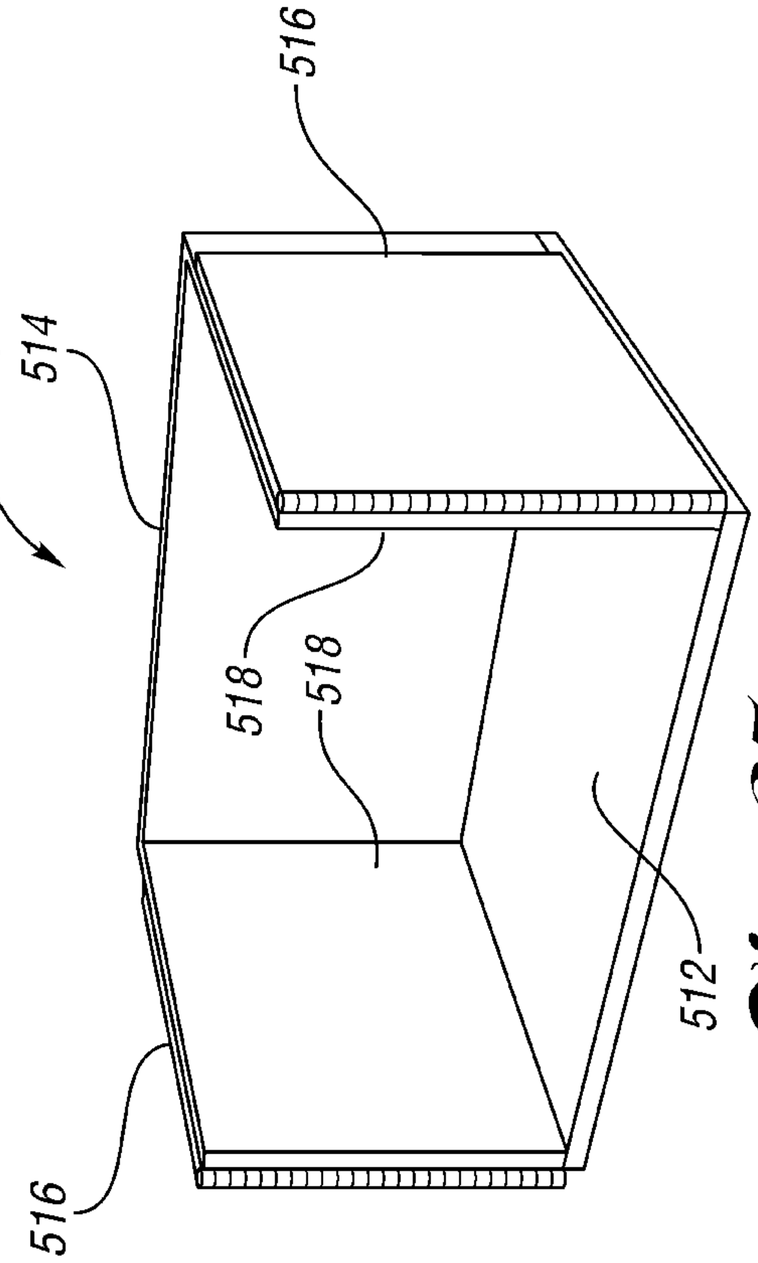

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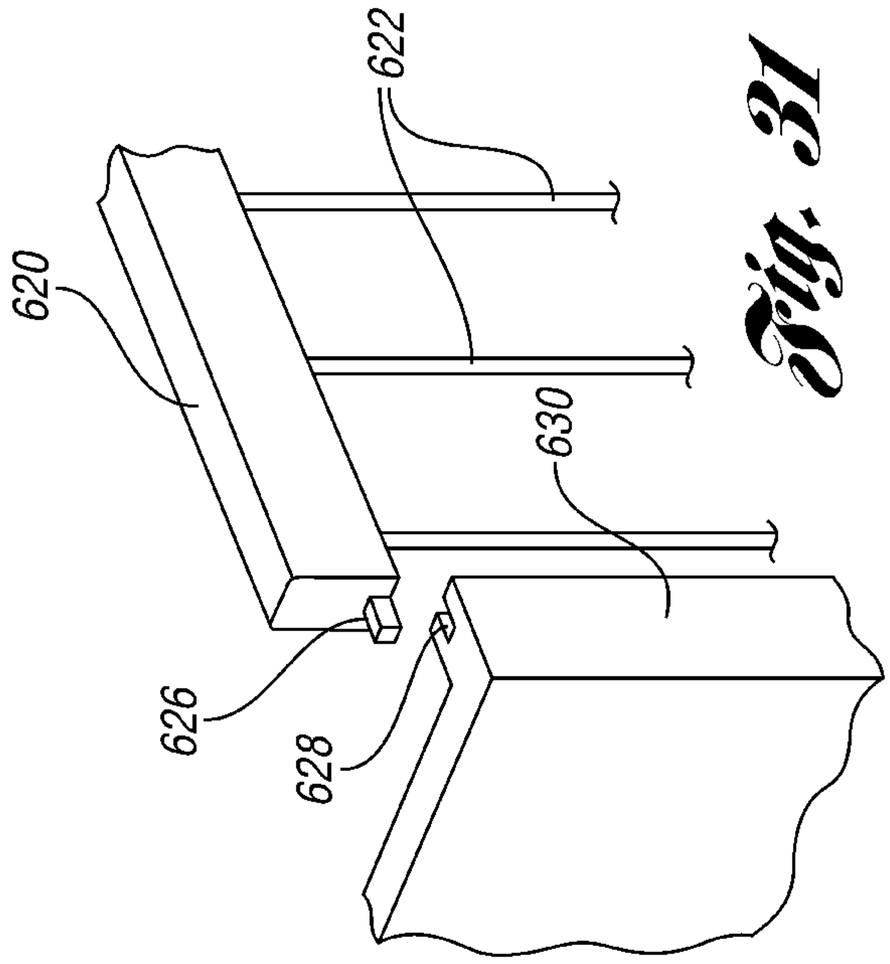

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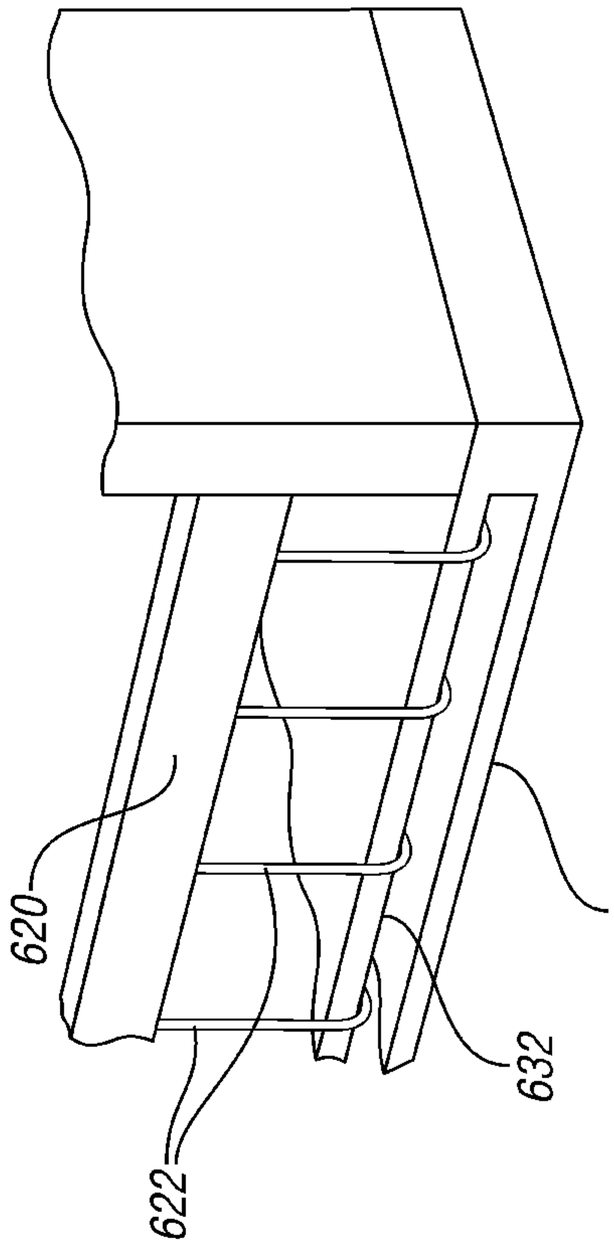

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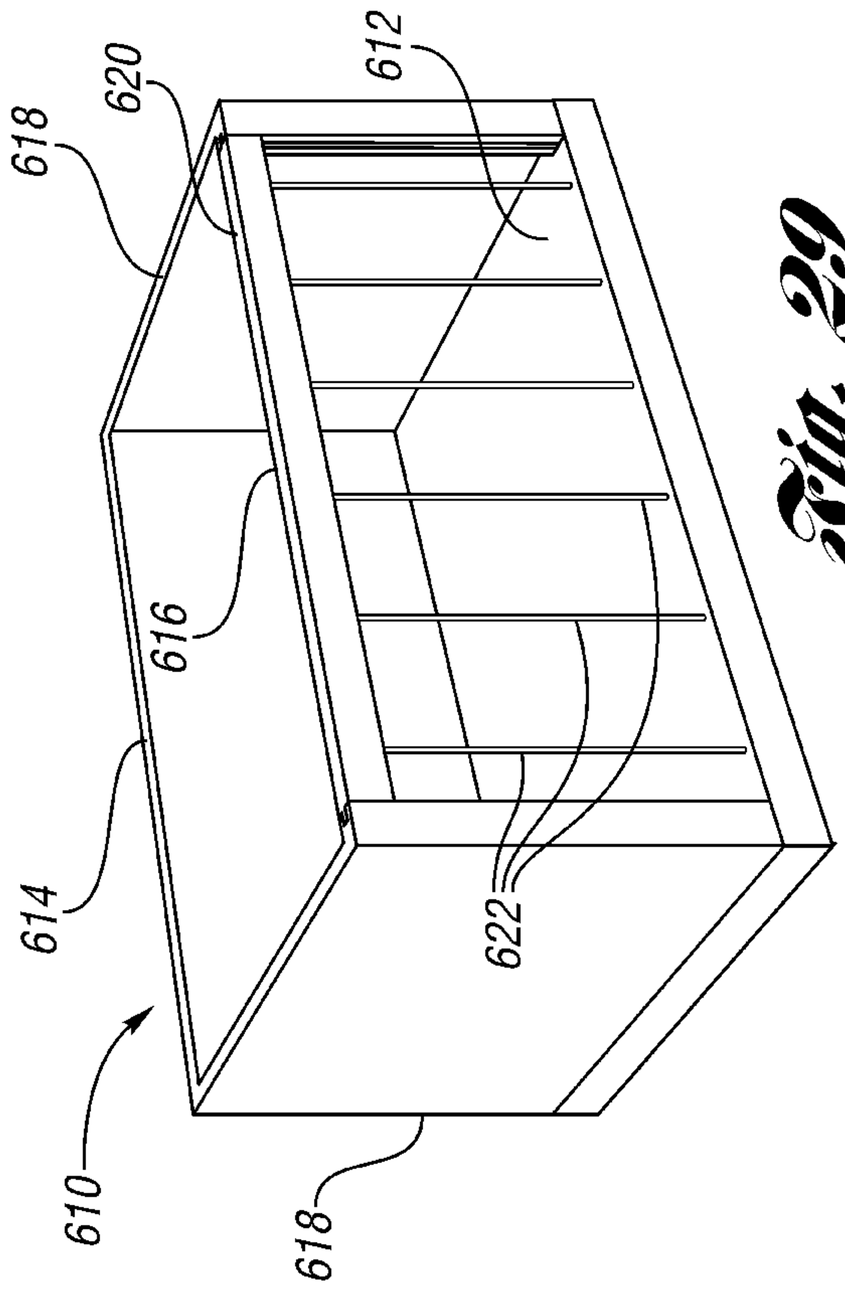

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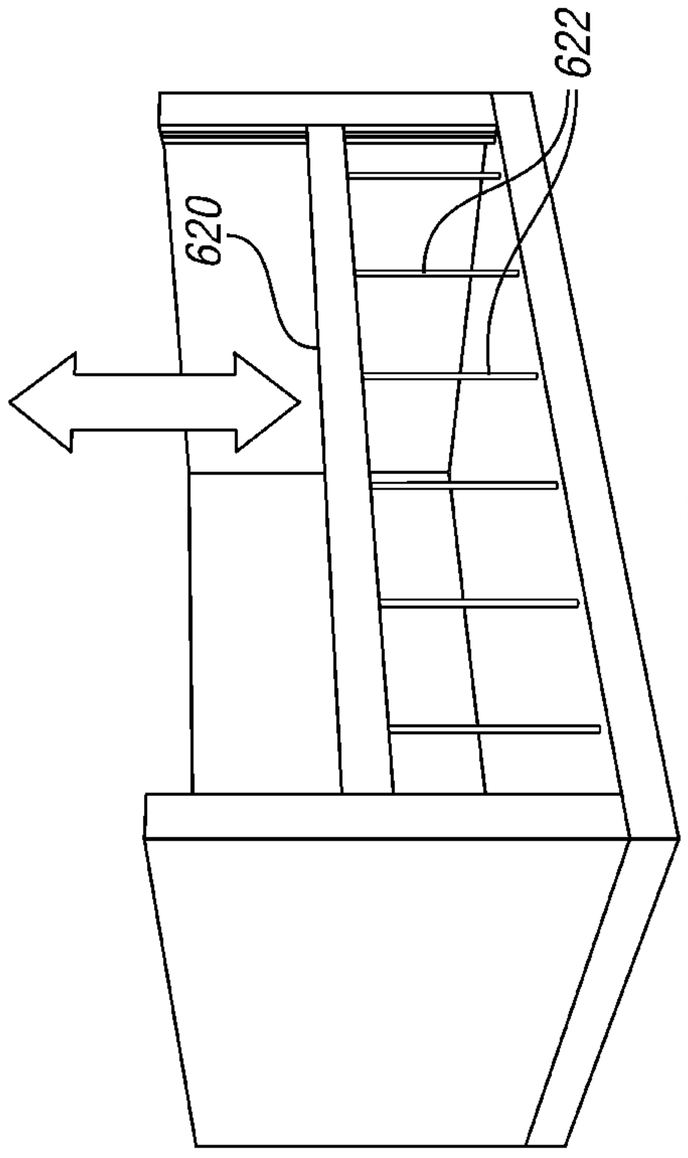

Fig. 30

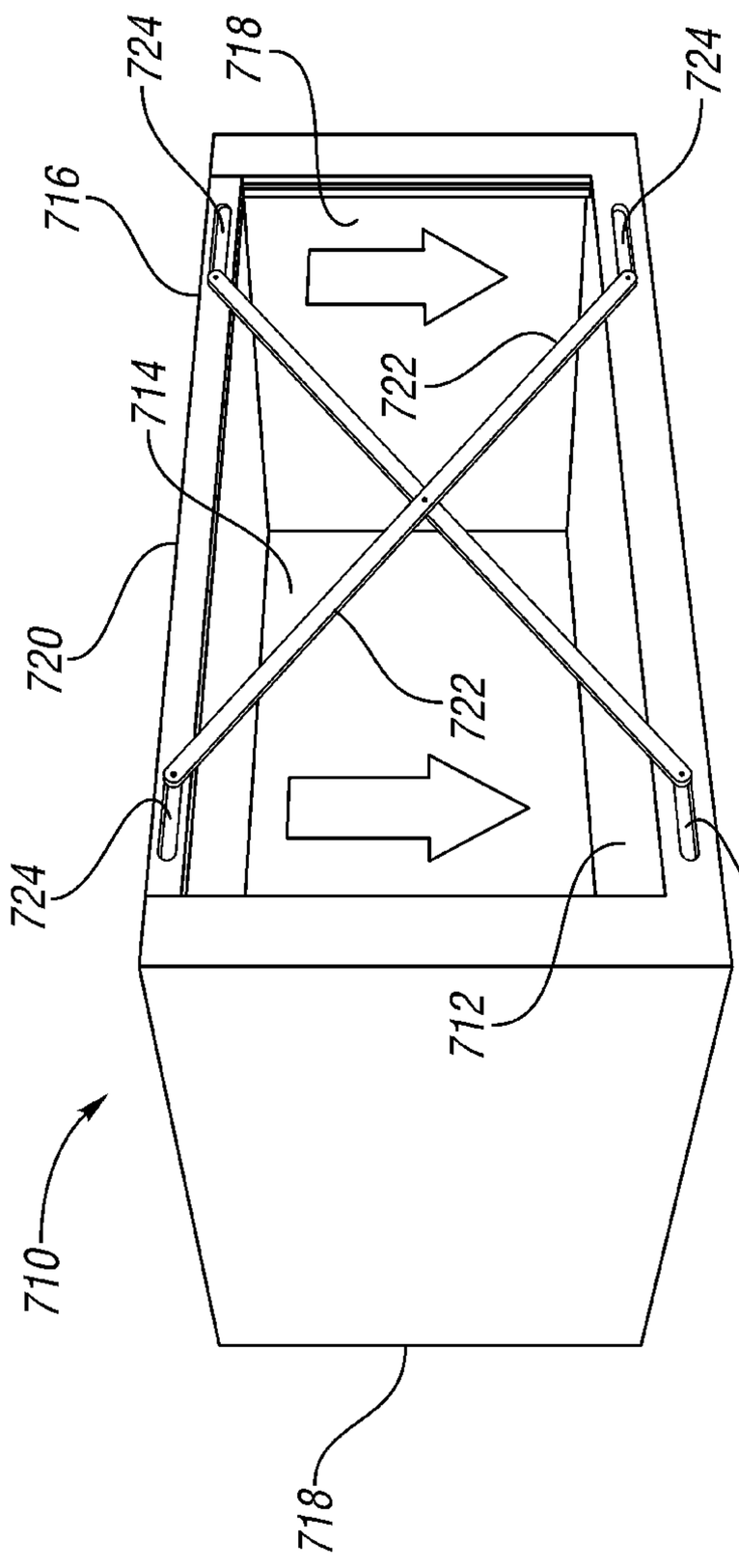
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Fig. 33

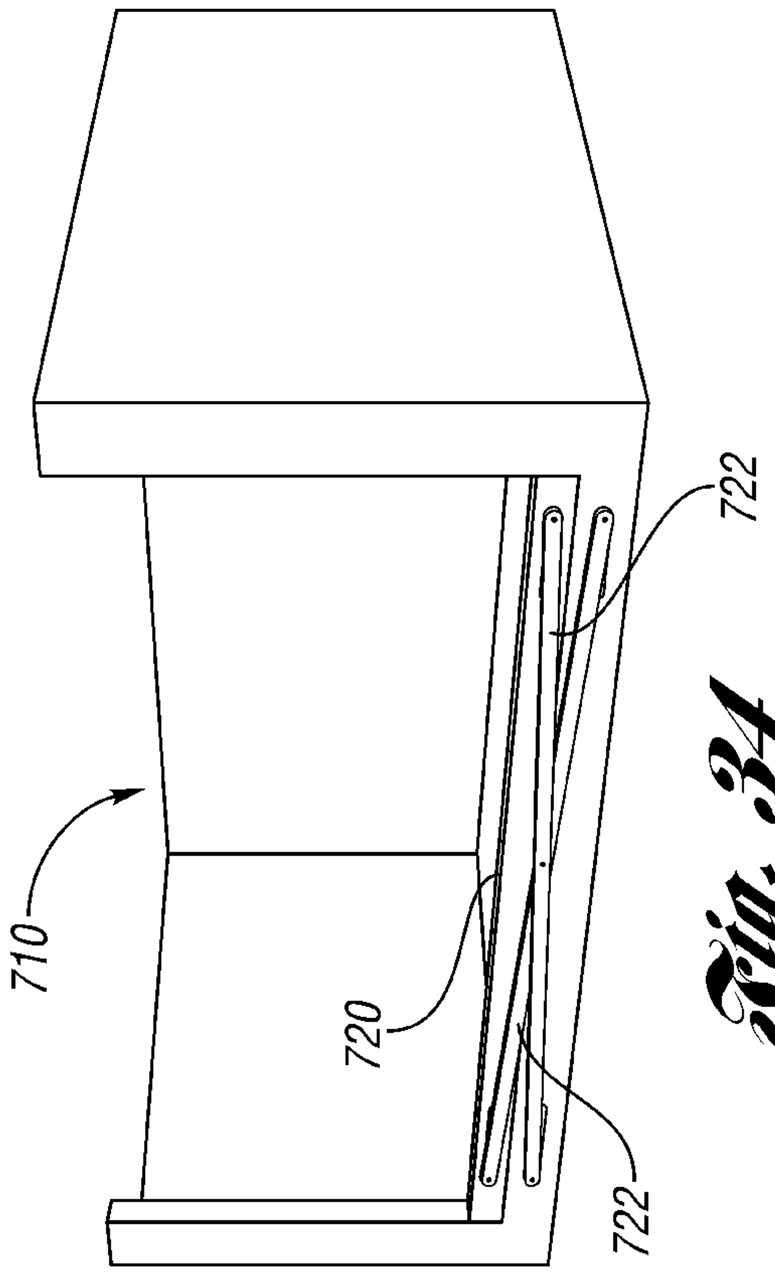
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Fig. 34

CRATE WITH RETRACTABLE WALL

BACKGROUND

The present invention relates generally to containers and more particularly to a crate that is particularly useful for transporting egg cartons or other items to a store.

Currently, egg cartons are shipped to stores in metal crates. The crates must be unloaded onto shelves for the customers to select and purchase. This requires labor for handling the egg cartons in the store. The metal crates are expensive and are damaged easily. They are also subject to rust and are not recyclable. They are also not easily repairable.

SUMMARY

A crate includes a base and a plurality of walls including a front wall. The front wall is movable between a retracted, open position and a closed position.

In some embodiments, the front wall includes a frame, a first portion and a second portion. The first portion is hingeably connected to the frame and the second portion is hingeably connected to the first portion.

The first portion and the second portion may each include a horizontal wall portion and a pair of arms. In some embodiments, the second portion may optionally be connected to the crate only via hinges at outer ends of the pair of arms of the second portion.

In some embodiments, the arms may extend upward from the horizontal portion of the second portion when the front wall is in the closed position and when the front wall is in the retracted, open position.

In some embodiments, the arms extend downward from the horizontal portion of the first portion when the front wall is in the closed position and the arms extend upward from the horizontal portion of the first portion when the front wall is in the retracted, open position.

The arms of the second portion may be hingeably connected to the arms of the first portion between the horizontal portion of the first portion and the hinged connection of the first portion to the frame.

In order to keep the goods in the crate when the front wall is in the closed position, the horizontal portion of the first portion can be spaced vertically above the horizontal portion of the second portion.

To facilitate the removal of the goods from the crate, when the front wall is in the open, retracted position, the horizontal portion of the first portion is at substantially the same height as the horizontal portion of the second portion adjacent the base.

In another embodiment, the front wall includes a third portion hingeably connected to the second portion and hingeably connected to the frame.

In another embodiment, the front wall is connected to a plurality of arms and the front wall is retractable to a retracted position adjacent an outer surface of the rear wall.

In another embodiment, the plurality of walls includes a pair of side walls adjacent the front wall. The front wall includes a pair of front wall portions that are selectively retractable into a position parallel to the side walls. Each of the side walls and each of the front wall portions may optionally include a handle opening, such that the handle openings of the front wall portions align with the handle openings of the side walls when the front wall portions are retracted.

In another embodiment, the front wall includes an upper rail and a plurality of cords extending from the upper rail to the base. The upper rail is movable from an upper position when the front wall is in the closed position, to a lower position when the front wall is in the open, retracted position.

In another embodiment, the front wall includes an upper rail and a plurality of braces (first and second portions) extending from the upper rail to the base. The braces are pivotably and slidably connected to the upper rail and to the base.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a crate according to a first embodiment.

FIG. **2** shows the crate of FIG. **1** with the upper portion of the front wall pivoted downward.

FIG. **3** shows the crate of FIG. **1** with the front wall in the retracted position with the upper portion and the lower portion of the front wall pivoted downward.

FIG. **4** shows the crate of FIG. **1** in the collapsed position.

FIG. **5** is a perspective view of a crate according to another embodiment.

FIG. **6** shows the crate of FIG. **5** with the front wall pivoted slightly forward.

FIG. **7** shows the crate of FIG. **5** with the front wall pivoted more forward.

FIG. **8** shows the crate of FIG. **5** with the front wall in the retracted position.

FIG. **9** shows the crate of FIG. **5** in the collapsed position.

FIG. **10** is a perspective view of a crate according to another embodiment.

FIG. **11** shows the crate of FIG. **10** with the front wall pivoted slightly forward.

FIG. **12** shows the crate of FIG. **10** with the front wall near the retracted position.

FIGS. **13**A and **13** B are interior views of one of the latches connecting the upper portion of the front wall to the frame.

FIG. **14** is a perspective view of a crate according to another embodiment.

FIG. **15** shows the crate of FIG. **14** with the front wall pivoted rearward.

FIG. **16** shows the crate of FIG. **14** with the front wall pivoted more rearward.

FIG. **17** shows the crate of FIG. **14** with the front wall in the retracted position.

FIG. **18** shows the crate of FIG. **14** in the collapsed position.

FIG. **19** is a perspective view of a crate according to another embodiment with the front wall partially open.

FIG. **20** is an enlarged view showing one of the walls of the crate of FIG. **19** being retracted.

FIG. **21** is a side view showing one of the walls of the crate of FIG. **19** being retracted.

FIG. **22** is a side view showing one of the walls of the crate of FIG. **19** being retracted further.

FIG. **23** is a side view showing the side wall of the crate in the retracted position.

FIG. **24** is a perspective view of a crate according to another embodiment with the front wall partially open.

FIG. **25** shows the crate of FIG. **24** with the front walls completely open.

FIG. **26** is a top view of the crate of FIG. **24** with the front walls closed.

FIG. **27** is a top view of the crate of FIG. **24** with the front walls partially open.

FIG. **28** is a top view of the crate of FIG. **25** with the front walls more open.

FIG. **29** is a perspective view of a crate according to another embodiment.

FIG. **30** shows the crate of FIG. **29** with the front wall being moved toward a retracted position.

FIG. **31** is an enlarged view of a top front corner of the crate of FIG. **29**.

FIG. **32** is an enlarged view of the base of the crate of FIG. **29**.

FIG. **33** is a perspective view of a crate according to another embodiment.

FIG. **34** shows the crate of FIG. **33** with the front wall in a retracted position.

DESCRIPTION OF PREFERRED EMBODIMENTS

A collapsible container **10** according to a first embodiment is shown in FIGS. **1-4**. In FIG. **1**, the container **10** is in an upright, assembled position. The container **10** includes a base **12**. A rear wall **14**, end walls **16** and a front wall **18** are pivotably connected at a periphery of the base **12**. Known hinges and latches can be used with the walls **14**, **16**, **18** of the collapsible container **10**.

The front wall **18** includes a frame **20** pivotably connected to the base **12** and selectively connected to the end walls **16** by latches **22**. The front wall **18** further includes an upper (or "first") portion **24** and a lower (or "second") portion **26**. The upper portion **24** includes a horizontal wall portion **28** and a pair of arms **30** extending from ends of the horizontal wall portion **28** in a direction generally perpendicular to the horizontal wall portion **28** to form generally a U-shape (opening downward in FIG. **1**). In FIG. **1**, the upper portion **24** is selectively latched to the frame **20** in an upper position by a latch. The arms **30** of the upper portion **24** are pivotably connected to the frame **20** by hinges **38** on the front of the frame **20**. The lower portion **26** includes a horizontal wall portion **32** and a pair of arms **34** extending from ends of the horizontal wall portion **32** in a direction generally perpendicular to the horizontal wall portion **32** to form generally a U-shape (opening upward in FIG. **1**).

In FIG. **1**, the walls **14**, **16**, **18** are in their upright, use position. The front wall **18** is in its deployed, closed position, with the horizontal wall portion **28** of the upper portion **24** and the horizontal wall portion **32** of the lower portion **26** extending across an upper portion and a mid-portion, respectively, of a large opening defined by the frame **20**. In the deployed, closed position, the front wall **18** keeps objects, such as egg cartons, in the container **10**.

In FIG. **2**, the upper portion **24** has been pivoted downward about hinges **38**, such that the arms **30** extend downward from the hinges **38** and the horizontal wall portion **28** extends across a bottom of the front wall **18**. In FIG. **2**, the lower portion **26** has also been flipped relative to FIG. **1**, such that the arms **34** now extend upward from the hinges **40** on the rear surface of the arms **30** of the upper portion **24**.

In FIG. **3**, the lower portion **26** is pivoted about the hinges **38** on the arms **30** of the upper portion **24** to a lower position, across the bottom of the front wall **18**, where the horizontal wall portion **32** of the lower portion **26** is substantially aligned with the horizontal wall portion **32** of the upper portion **24**. In FIG. **3**, the front wall **18** is in a retracted, open position, in which consumers can access the contents (such as egg cartons) of the container **10**. Note that it is also possible to move the front wall **18** to the retracted, open position even when an identical container is stacked on the container **10**.

When the container **10** is empty, the walls **14**, **16**, **18** can be collapsed onto the base **12** as shown in FIG. **4** for more efficient storage and shipping to be reused.

A collapsible container **110** according to a second embodiment is shown in FIGS. **5-9**. In FIG. **5**, the container **110** is in an upright, assembled position. The container **110** includes the same base **12**, rear wall **14** and end walls **16** as in the first embodiment. A different front wall **118** is presented.

The front wall **118** includes a frame **120** pivotably connected to the base **12** and selectively connected to the end walls by latches **22**. The front wall **118** further includes an upper (or "first") portion **124** and a lower (or "second") portion **126**. The upper portion **124** includes a horizontal wall portion **128** and a pair of arms **130** extending downward from ends of the horizontal wall portion **128** (as an inverted U-shape). The lower portion **126** includes a horizontal wall portion **132** and a pair of arms **134** extending upward from ends of the horizontal wall portion **132**, such that the lower portion **126** hangs from the hinges **140** at the upper ends of the arms **134** attached to a mid-point on the front of the arms **130** of the upper portion **124** (in an upright U-shape). The arms **130** of the upper portion **124** are pivotably connected to the frame **120** by hinges **138**.

In FIG. **5**, the walls are in their upright, use position. The front wall **118** is in its deployed, closed position, with the upper portion **124** and the lower portion **126** extending across an upper portion and a mid-portion, respectively, of a large opening defined by the frame **120**. In the deployed, closed position, the front wall **118** keeps objects, such as egg cartons, in the container **110**.

In FIG. **6**, the upper portion **124** has been pivoted downward and forward slightly about hinges **138**, such that lower portion **126** moves away from the rest of the container **10** and hangs down freely from the hinges **140**. In FIG. **7**, the upper portion **124** is pivoted forward and downward further.

In FIG. **8**, the front wall **118** is shown in the retracted, open position. The upper portion **124** and the lower portion **126** are pivoted to a lower position, where the horizontal panel portions **128**, **132** are positioned across the bottom of the front wall **118** (and the U-shapes of the upper portion **124** and lower portion **126** are aligned). The horizontal wall portion **132** of the lower portion **126** is substantially aligned with the horizontal wall portion **132** of the upper portion **124**. In FIG. **8**, the front wall **118** is in a retracted, open position, in which consumers can access the contents (such as egg cartons) of the container **110**. Note that it is also possible to move the front wall **118** to the retracted, open position even when an identical container is stacked on the container **110**.

When the container **110** is empty, the walls **14**, **16**, **118** can be collapsed onto the base **12** as shown in FIG. **9** for more efficient storage and shipping to be reused.

A container **210** according to a third embodiment is shown in FIGS. **10-13**. In FIG. **10**, the container **210** is in an upright, assembled position. The container **210** includes substantially the same base **12**, rear wall **14** and end walls **16** as in the first two embodiments. A different front wall **218** is presented.

The front wall **218** includes a frame **220** pivotably connected to the base **12** and selectively connected to the end walls by latches **22**. The front wall **218** further includes an upper (or "first") portion **224**, a mid-portion (or "second" portion) **226** and a lower (or "third") portion **250**. The upper

portion **224** includes a horizontal wall portion **228** and a pair of arms **230** extending downward from ends of the horizontal wall portion **228** (in an inverted U-shape). The upper portion **224** is connected to the frame **220** by a latch **225**. The mid-portion **226** includes a horizontal wall portion **232** and a pair of arms **234** extending upward from ends of the horizontal wall portion **232**, such that the mid-portion **226** hangs from the hinges **240** at the upper ends of the arms **234** attached to a mid-point on the front of the arms **230** of the upper portion **224** (in an upright U-shape). The arms **230** of the upper portion **224** are pivotably connected to the frame **220** by hinges **238**.

The lower portion **250** includes a horizontal wall portion **251** and a pair of arms **252** extending downward from ends of the horizontal wall portion **251** to hinges **254** at the lower ends of the arms **252** attached to the frame **220** (in an inverted U-shape). The upper edge of the lower portion **250** is connected to the lower edge of the mid-portion **226** by a hinge **256**, such as a living hinge or a snap-fit hinge or other suitable hinge.

In FIG. **10**, the walls are in their upright, use position. The front wall **218** is in its deployed, closed position, with the upper portion **224**, the mid-portion **226** and the lower portion **250** extending across an upper portion, a mid-portion and a lower portion respectively, of a large opening defined by the frame **220**. In the deployed, closed position, the front wall **218** keeps objects, such as egg cartons, in the container **210**.

In FIG. **11**, the upper portion **224** has been pivoted downward and forward slightly about hinges **238**, such that mid-portion **226** and the lower portion **250** (particularly, the hinge **256**) move away from the rest of the container **210**. In this Figure, the complementary latch portion **227** to the latch **225** can be seen, the latch portion **227** on the frame **220** selectively connects the upper portion **224** to the frame **220**.

In FIG. **12**, the front wall **218** is shown close to the retracted, open position. The upper portion **224**, the mid-portion **226** and the lower portion **250** are then pivoted to a lower position, where the horizontal panel portions **228**, **232**, **251** are positioned across the bottom of the front wall **218** (and the U-shapes are aligned). The horizontal wall portion **232** of the mid-portion **226** is substantially aligned with the horizontal wall portion **228** of the upper portion **224** and the horizontal wall portion **251** of the lower portion **250**. The front wall **218** is in a retracted, open position, in which consumers can access the contents (such as egg cartons) of the container **210**. Note that it is also possible to move the front wall **218** to the retracted, open position even when an identical container is stacked on the container **210**.

FIGS. **13**A and **13** B are interior views of one of the latches connecting the upper portion **224** of the front wall **218** to the frame **220**. As shown, the latch **225** of the upper portion **224** selectively connects to the latch portion **227** on the frame **220**.

When the container **210** is empty, the walls **14**, **16**, **218** can be collapsed onto the base **12** for more efficient storage and shipping to be reused.

A collapsible crate **310** according to another embodiment of the present invention is shown in FIGS. **14-18**. The crate **310** includes a base **312**, a rear wall **314**, a front wall **316** and end walls **318**. The rear wall **314** and end walls **318** are pivotably connected to the base **312**, such that they can be selectively collapsed onto the base **312** in a known manner (with appropriate hinges, latches, etc.).

The rear wall **314** is pivotably connected at its upper edge to a pair of first arms **320**, which in turn are pivotably connected to a pair of second arms **322**, which are connected to an upper edge of the front wall **316**. There may be latches or other means for releasably securing the front wall **316** to the end walls **318** and/or the base **312**. The first and second arms **320**, **322** rest on the upper edges of the end walls **318** and may be received in a recess or channel there. In FIG. **14**, the crate **310** is shown in the assembled, shipping position with the walls **314**, **316**, **318** in the upright position relative to the base **312**.

Referring to FIGS. **15-16**, the front wall **316** can be retracted from its upright position by lifting the front wall **316** and pivoting the first arms **320** and the second arms **322** rearward. As shown in FIG. **16**, the front wall **316** swings through the first arms **320** and second arms **322** to a position behind the rear wall **314**. The front wall **316** can then be brought to its retracted position as shown in FIG. **17**, where the front wall **316** abuts the outer surface of the rear wall **314**. The first and second arms **320**, **322** are folded together and received in a recess at the upper rear edge of each end wall **318**.

In this manner, a crate **310** loaded with goods for sale, such as egg crates, could be shipped to a store. At the store, the front wall **316** can be moved from the upright, shipping position of FIG. **14** to the retracted position of FIG. **17** where customers can view, select and remove the goods from the crate **310**. The goods therefore do not need to be removed from the crate **310** by workers at the store. When the crate **310** is empty, the end walls **318** are pivoted down onto the base **312** as shown in FIG. **18**. The rear wall **314** and front wall **316** are pivoted down together onto the base **312** and end walls **318** to the collapsed position as shown in FIG. **6**. In the collapsed position, empty crates **310** can more efficiently be stored and then shipped back to the warehouse where they can be reused.

A collapsible crate **410** according to another embodiment of the present invention is shown in FIGS. **19-23**. The crate **410** includes a base **412**, a rear wall **414**, a pair of front wall portions **416** and end walls **418**. The rear wall **414** and end walls **418** are pivotably connected to the base **412**, such that they can be selectively collapsed onto the base **412** in a known manner (with appropriate hinges, latches, etc.).

The front wall portions **416** are each pivotably and slidably connected to the adjacent end walls **418**. Each of the end walls **418** includes a handle opening **450**. Each of the front wall portions **416** includes a handle opening **452**. As shown in FIGS. **20-21**, after the front wall portion **416** is pivoted outward, it can slide into the adjacent end wall **418** (or along the outside of end wall **418**). FIGS. **22-23** show that the handle opening **452** of the front wall portion **416** aligns with the handle opening **450** of the end wall **418** when the front wall portion **416** is retracted into (or adjacent) the end wall **418**. Thus, the handles **450**, **452** can be used to lift the crate **410** when the front wall portions **416** are retracted.

Retraction of the front wall portions **416** provides access to the crate **410** interior. When empty, the crate **410** can be collapsed by pivoting the rear wall **414** and end walls **418** (with the front wall portions **416** inside or adjacent) onto the base **412**.

FIGS. **24-28** illustrate a crate **510** according to another embodiment of the present invention. The crate **510** includes a base **512** with rear **514** and end walls **518** pivotably mounted thereto. Front walls **516** are hingeably connected to adjacent end walls **518** such that the front walls **516** could be selective pivoted back to a position adjacent and abutting the end walls **518**. This provides increased access to the crate **510** interior. When empty, the walls **514**, **518** and **516** can be pivoted to a collapsed position on the base **512**.

A collapsible crate **610** according to another embodiment of the present invention is shown in FIGS. **29-32**. The crate **610** includes a base **612**, a rear wall **614**, a front wall **616** and end walls **618**. The rear wall **614** and end walls **618** are pivotably connected to the base **612**, such that they can be selectively collapsed onto the base **612** in a known manner (with appropriate hinges, latches, etc.).

Front wall **616** includes an upper rail **620** and a plurality of elastic or resilient cords **622**. The cords **622** are attached to the upper rail **620** and extend down to the base **612**. In FIG. **29**, the cords **622** are shown stretched tightly from the base **612** to the upper rail **620**, where the upper rail **620** is at its upper, closed position at the top of the crate **610**.

As shown in FIG. **30**, the upper rail **620** can be slid down to provide increased access to the crate **610**. The upper rail **620** can be slid down onto the base **612**. The cords **622** retract back to their unstretched size, so that they are not in the way.

FIG. **31** shows more detail of the top of the crate **610**. Each end of the upper rail **620** includes a hook **626** that is received in a recess **628** at the top of a flange **630** from the end wall **618**. This retains the upper rail **620** selectively at the top of the crate **610**.

FIG. **32** shows more detail of the front of the base **612** of the crate **610**. The base includes a front opening **632** into which the cords **622** extend. The cords **622** are attached inside the base **612** (in the middle or at the rear, depending on how much distance is needed so that the cords **622** will retract into the base without hanging down).

In this manner, a crate **610** loaded with goods for sale, such as egg crates, could be shipped to a store. At the store, the upper rail **620** can be moved from the upper, shipping position of FIG. **29** where the cords **622** retain the goods in the crate **610** to the retracted position on the base **612** where customers can view, select and remove the goods from the crate **610**. The goods therefore do not need to be removed from the crate **610** by workers at the store.

When the crate **610** is empty, the end walls **618** are pivoted down onto the base **612**. In the collapsed position, empty crates **610** can more efficiently be stored and then shipped back to the warehouse where they can be reused.

A collapsible crate **710** according to another embodiment of the present invention is shown in FIGS. **33-34**. The crate **710** includes a base **712**, a rear wall **714**, a front wall **716** and end walls **718**. The rear wall **714** and end walls **718** are pivotably connected to the base **712**, such that they can be selectively collapsed onto the base **712** in a known manner (with appropriate hinges, latches, etc.).

The front wall **716** includes an upper rail **720** slidably connected to the end walls **718**. Two braces **722** are pivotably connected to one another near their middle. The braces **722** are pivotably and slidably connected at their upper ends to channels **724** in the upper rail **720** and at their lower ends to channels **724** in the base **712** (or a flange extending upward from a front of the base **712**).

In FIG. **33**, the front wall **716** is shown in its upright, closed position. In this position, the goods can be shipped to the store in the crate **710**. At the store, the front wall **716** can be retracted to the position shown in FIG. **34**, so that customers can easily access the goods directly from the crate **710**. When empty, the walls of the crate **710** can be collapsed onto the base **712** for more efficient storage and shipping.

In accordance with the provisions of the patent statutes and jurisprudence, exemplary configurations described above are considered to represent a preferred embodiment of the invention. However, it should be noted that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.

What is claimed is:

1. A collapsible crate comprising:

a base; and

a plurality of walls including a rear wall, a pair of opposed end walls and a front wall pivotably connected at a periphery of the base, wherein the front wall is movable between a retracted, open position and a closed position; wherein the front wall includes a frame, an upper portion hingeably connected to the frame and a lower portion hingeably connected to the frame, wherein the upper portion is selectively secured to the frame in the closed position by latches.

2. The crate of claim **1** wherein the upper portion and the lower portion each include a horizontal wall portion and a pair of arms.

3. The crate of claim **2** wherein the pair of arms extend downward from the horizontal portion of the lower portion when the front wall is in the closed position and upward when the front wall is in the retracted, open position.

4. The crate of claim **3** wherein the pair of arms extend downward from the horizontal portion of the upper portion when the front wall is in the closed position and wherein the pair of arms extend upward from the horizontal portion of the upper portion when the front wall is in the retracted, open position.

5. The crate of claim **4** wherein the lower portion is hingeably connected to the pair of arms of the upper portion between the horizontal portion of the upper portion and the hinged connection of the upper portion to the frame.

6. The crate of claim **5** wherein the horizontal portion of the upper portion is spaced vertically above the horizontal portion of the lower portion when the front wall is in the closed position.

7. The crate of claim **6** wherein the horizontal portion of the upper portion is at substantially the same height as the horizontal portion of the lower portion when the front wall is in the open, retracted position.

8. The crate of claim **7** wherein the plurality of walls are movable between an upright position and a collapsed position on the base, and wherein the front wall is movable between the retracted position and the closed position while the front wall is in the upright position.

9. The crate of claim **2** wherein the front wall includes a third portion hingeably connected to the second portion and hingeably connected to the frame.

10. The crate of claim **4** further including mid-arms hingeably connecting the lower portion to the pair of arms of the upper portion.

11. The crate of claim **10** wherein the mid-arms are hingeably connected to the upper portion between the horizontal portion of the upper portion and the hinged connection of the upper portion to the frame.

12. The crate of claim **11** wherein the frame includes a lower horizontal portion pivotably connected to the base and a pair of spaced apart vertical portions extending upward from opposite ends of the lower horizontal portion of the frame, wherein the vertical portions of the frame are selectively connected to the end walls by wall latches.

13. The crate of claim **1** wherein the frame includes a lower horizontal portion pivotably connected to the base and a pair of spaced apart vertical portions extending upward from opposite ends of the lower horizontal portion of the frame, wherein the vertical portions of the frame are selectively connected to the end walls by wall latches.

14. A collapsible crate comprising:

a base;

a rear wall pivotably connected to the base such that the rear wall can be selectively moved between an upright position and a collapsed position on the base;

a pair of opposed side walls pivotably connected to the base such that the pair of opposed side walls can be selectively moved between an upright position and a collapsed position on the base; and

a front wall adjacent the side walls, wherein the front wall is movable between a retracted, open position and a closed position, wherein the front wall includes a pair of front wall portions that are selectively retractable into a position parallel to the side walls while the side walls are in the upright position, wherein each of the side walls and each of the front wall portions includes a handle opening and wherein the handle openings of the front wall portions align with the handle openings of the side walls when the front wall portions are retracted.

15. A collapsible crate comprising:

a base;

a rear wall pivotably connected to the base such that the rear wall can be selectively moved between an upright position and a collapsed position on the base;

a pair of opposed end walls pivotably connected to the base such that the pair of opposed end walls can be selectively moved between an upright position and a collapsed position on the base; and

a front wall, wherein the front wall is movable between a retracted, open position and a closed position while the front wall is in an upright position relative to the base, wherein the front wall includes an upper rail and a plurality of cords extending from the upper rail to the base, wherein the upper rail is slidable vertically in tracks at opposite ends of the upper rail from an upper position when the front wall is in the closed position, to a lower position when the front wall is in the open, retracted position.

16. A collapsible crate comprising:

a base;

a rear wall pivotably connected to the base such that the rear wall can be selectively moved between an upright position and a collapsed position on the base;

a pair of opposed end walls pivotably connected to the base such that the pair of opposed end walls can be selectively moved between an upright position and a collapsed position on the base; and

a front wall, wherein the front wall is movable between a retracted, open position and a closed position while the front wall is in an upright position relative to the base,

wherein the front wall includes an upper rail slidable between the retracted, open position proximate the base and the closed position proximate an upper edge of the crate and a plurality of braces extending upward at angles to the upper rail when the front wall is in the closed position, wherein the braces are pivotably and slidably connected to the upper rail, wherein the braces are pivotable relative to the upper rail about axes generally perpendicular to a plane of the front wall when the front wall is in the upright position.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 10,988,308 B2
APPLICATION NO. : 16/101632
DATED : April 27, 2021
INVENTOR(S) : Mauricio D. Cavalcante et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

In Claim 9, Column 8, Line 47; replace “the second portion” with --the lower portion--

Signed and Sealed this
Twenty-second Day of March, 2022

Drew Hirshfeld
Performing the Functions and Duties of the
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office